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# TOXIC STRESS AND MATERNAL AND INFANT HEALTH: A Brief Overview and Tips for Community Health Workers

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**Please Note:**

Recommendations provided in this report are based on available literature. Implementation of these recommendations may be restricted by your funding source and/or funding agency's policies.

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## Toxic Stress

Communities living in poverty are constantly facing challenges, from the concern of meeting their families' daily needs to obtaining health care and education. For minority population living in poverty, these challenges are made worse by social and political issues tied to their race, ethnicity, language, disability, or immigration status, among others. These challenges cause stress that impacts the mind, the body and the community as a whole. For individuals of reproductive age living in such communities, these challenges are even more detrimental to pregnancy and infant outcomes. For program staff working to improve maternal and infant health it is important to understand the effects of these stressors and work with women and families to address these challenges and reduce the consequences.<sup>1</sup>

### What is “stress”?

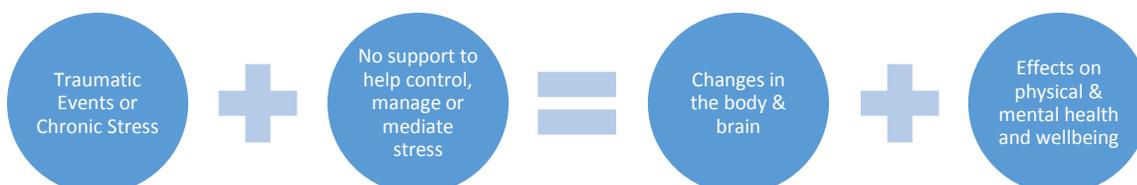
Stress is a word that is used regularly in our society, usually in a negative context. To understand stress, we must recognize that stress is our body's way of handling life's challenges. Stress is the body's response to a situation that is not normal and requires us to either fight, hide or run. Whether a person chooses the 'fight' or 'flight' response depends on the situation and the individual. For example, should you run into a snake while taking a walk, you may choose to run. However, if your child were in danger, you might choose to fight the danger to protect your baby. Whichever response you choose based on your situation and personal characteristics, your body's stress response is to immediately give you a rush of certain chemicals such as adrenaline – this gives you the extra energy to fight or run. This process is called the stress response. Therefore, stress is actually a good thing, a natural way the body helps us survive.

Many circumstances can cause stress responses: from the nervousness of dealing with certain people or going certain places, speaking in public, having or witnessing an accident or a violent act, and so on. Some stressors are part of life and happen often, while others are less frequent. In general, the main life stressors are related to family, relationships, living situations, health/illness, environment, school and work.

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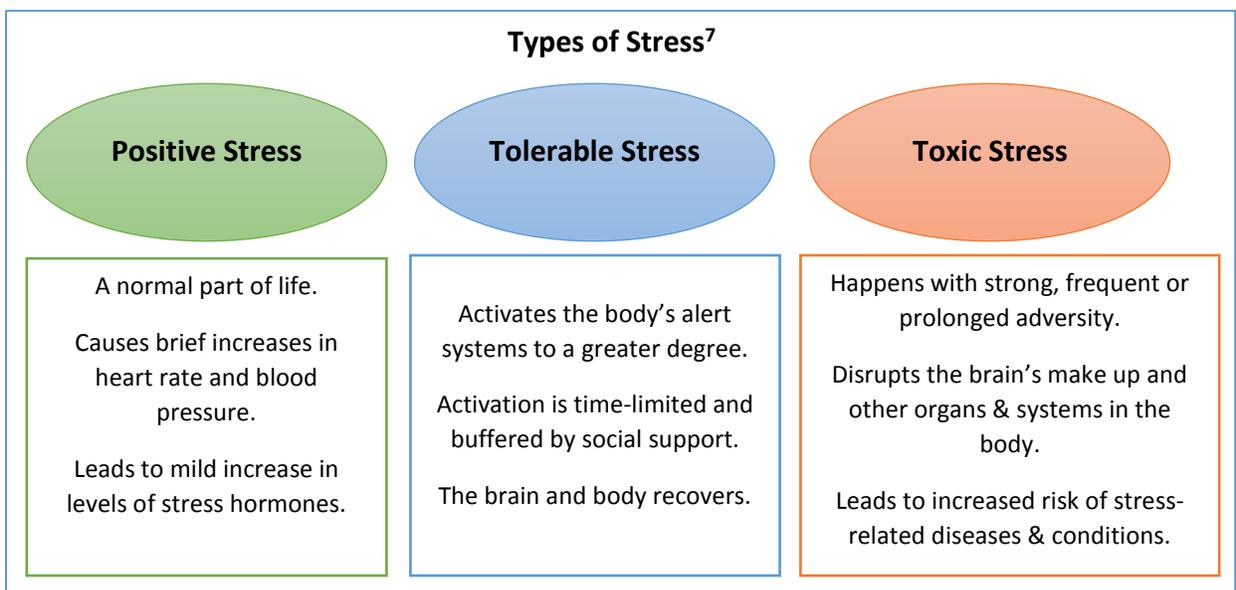
*Toxic Stress: the effect on body and mind when under stressful conditions for an extended period without a support network or other social buffer.*

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## How does stress become toxic?

Whatever comes our way, our stress response is there, like a reserve of energy that we draw upon when needed. This reserve can be depleted if used too often. For individuals who deal with stressful situations every day, or very often, these stress hormones and chemicals can be overused and our body begins to draw upon other resources in our body to make up for the extra energy needed to survive. When stress is constant, even when resulting from what might be considered “small problems,” it can become chronic stress, or the constant drawing from our stress energy account to deal with issues that are happening often. For example, a woman constantly having to worry about her safety because of an abusive partner; or one who is always worried about how she will be treated at work because she is the only woman, or the only person of color. These chronic stressful situations, if not addressed, become “toxic” to the body and lead to many physical, mental and emotional health problems.<sup>2-6</sup>



## What does toxic stress do to the body?

In general, the toxic effects of chronic stress lead to lower stress thresholds within the physical and psychological stress management systems, meaning the person becomes stressed very easily and quicker than normal. Lowered thresholds for responsiveness may persist over time and increase the risk of stress-related disease or disorders as well as mental impairment in the adult years.<sup>5</sup> Toxic stress may affect the brain and the body in the following ways:<sup>4, 5, 8-12</sup>

- **Learning, memory and emotions:** Experiencing chronic stress such as poverty, neglect or physical abuse early in life seems to change the parts of the brain that are important for learning, remembering and processing stress and emotion. Children whose brains are still developing are especially affected.

- ***Increase vulnerability to addiction:*** To cope with toxic stress, many turn to addictive behaviors that provide temporary relief from physical, emotional and psychological pain. Researchers have found a strong link between toxic stress and the overuse of alcohol, tobacco and other illicit drugs.
- ***Over-sensitive to situations that appear threatening:*** The more a particular part of the brain is activated through chronic stress, the more active and stronger it becomes. When a body's stress response reserved for dealing with threats is constantly triggered, individuals become over-sensitive, whether the situation is very threatening or not. This makes some people have a greater tendency towards quickly over-reacting with anger or hostility even when there is no threat.
- ***Increased stress response:*** Among adults that were abused as children, everyday situations such as traffic, arguments or disappointments, can trigger a heightened stress response. The childhood trauma experienced, when not addressed, causes the stress response to remain high, on alert. This can cause difficulty maintaining healthy relationships.
- ***Changes in DNA:*** Based on research in rats, being exposed to toxic stress early in life causes changes to a particular gene (the BNF gene) found in the brain and spinal cord. This gene plays an important role in learning and memory, as well as influencing parts of the brain that control eating, drinking and body weight. Even more concerning is that this change in DNA was passed on to the offspring, even though the offspring were not exposed to toxic stress. This suggests that the effects of toxic stress can be inherited.
- ***Greater risk for mental illness:*** Studies have shown that people with a history of chronic stress in childhood may be at higher risk for depression in adulthood.
- ***Greater risk for physical illness:*** Toxic stress causes an increase in stress hormones, which interfere with the functioning of the immune system. This can lead to increased risk for auto-immune illnesses such as arthritis, allergies, asthma, fibromyalgia, and lupus, among others.
- ***Chronic pain conditions:*** Childhood toxic stress is an important risk factor for migraines, irritable bowel syndrome, chronic fatigue syndrome, and arthritis. For women, physical abuse has been associated with endometriosis, and physical neglect has been associated with uterine fibroids.

The ability to manage stressors varies by person and by circumstances.

Health conditions associated with toxic stress:

- Higher blood pressure, greater risk of heart attack and stroke
- Reduced memory and immune function
- Acid reflux, ulcers, irritable bowel syndrome
- Increased risk of anxiety, depression, & insomnia
- Severe obesity
- Diabetes
- Shortened life span

- *Compromised immune system:* Stress responses happen immediately, as soon as the threat appears, but the immune system takes longer to respond (hours, sometimes days). When the stress is short-lived, even if it is intense, the immune system is not affected because the stress reaction ends before the immune system gets the chance to react. However, with chronic, long-term stress, the chemicals released (cortisol, adrenaline) keeps being released in the body. Cortisol, for example, shuts down the ability of the immune cells to respond to foreign invaders (germs, for example). When cortisol is constantly released, the immune cells do not get the chance to recuperate. This means that when the body comes into contact with a virus or an infection, it does not have its full strength to fight them and the person becomes an easy target for diseases.

### How does toxic stress affect reproductive health?

For women who are of reproductive age, chronic stress is also toxic not only to the woman, but to her pregnancy and her infant. Toxic stress impact mothers and children at all critical stages in reproductive life: before (preconception, Interconception), during (prenatal) and after (postpartum) pregnancy. Risk factors for toxic stress that have been examined include extreme poverty, chronic neglect, discrimination, racism, severe depression, parental substance abuse, family violence, and repeated emotional and physical abuse. Stressors may also be in the physical environment, often presented as chemicals and neurotoxins such as lead (found in paint in houses built prior to 1978), mercury (some fish) and insecticides.

#### *Before pregnancy*

Toxic stress that mothers experience prior to conception can have lasting effect on their future pregnancies. The mechanisms that cause changes in DNA, as described above, usually include traits that genetically direct stress responses. In some cases, this results in behavioral issues for the children of mothers who were exposed to preconception toxic stress. These mothers may also experience other pregnancy-related complications, including increased risk of preterm birth. For example, a study that looked at exposure to toxic stress in the preconception stage found that in the 15 to 19 year-old age group, the risk of preterm birth increased four-fold. The impact of toxic stress was present for other age groups but it was strongest among adolescent mothers.<sup>13</sup> Another study found that women who are exposed to toxic stress prior to conception were also 38% more likely than non-exposed mothers to give birth to a child with a low birthweight.<sup>14</sup> Overall, toxic stress experienced prior to a woman becoming pregnant has been linked to preterm birth, low birth weight, and later developmental issues for the children.

#### *During pregnancy*

Similar to prior to pregnancy, exposure to toxic stress during pregnancy can result in preterm births as well as low birth weight, both of which impact the development of children well past infancy. The biological process for how this happens is that, under conditions of toxic stress, mothers have been found to have an increase in changes to their own genes as well as those of

their child. In mice, research has shown that maternal toxic stress results in behavioral changes in offspring, including increased fear and stress reactivity.<sup>15</sup> This suggests that maternal stress can change the mother's DNA and impact the infant. For example, research among women who developed PTSD (post-traumatic stress disorder) as a result of exposure to the attack on the World Trade Center in New York (2001), had infants with lower cortisol levels and higher distress, indicating that these children's stress responses were not optimal.<sup>16</sup> Another similar study found that women who experienced the event had higher risks for low birth weight, small for gestational age and preterm delivery.<sup>17</sup>

### *Beyond pregnancy*

Exposure of a child to certain environmental factors increases the risk of toxic stress, which may eventually result in health, behavioral, and developmental complications. There are several categories of abuse including psychological, sexual, and physical violence against the mother. Though there is little concrete proof that early childhood experiences influence economic productivity and educational achievement, there is significant evidence that there is an association between the two.<sup>18-20</sup> This reinforces the idea that postnatal experiences influence health outcome later in life. Based on the studies, it is difficult to determine when such abuse and dysfunction may have begun, therefore it may be the case that individuals who experienced such events in early childhood are also impacted by preconception or prenatal exposure to their mother's toxic stress.

### *How can we address toxic stress?*

The good news is, with the help of a positive environment and support, some of these negative effects of toxic stress can be reversed. The earlier the stressors are addressed the better the chance of improving health outcomes. This is particularly promising information, as it offers a seed of hope and incentive for work with and by community health workers to support mothers and improve the chances at improved pregnancy and infant outcomes.<sup>1, 21</sup>

*The effects of toxic stress  
are not permanent.*

Based on results of interventions, the key to addressing toxic stress is social support and building physical and emotional resilience.<sup>1, 21-23</sup> Because stress causes a physical reaction, building up the chemicals and hormones that can counteract the toxic effect of stress can help to reduce the negative consequences. Research findings indicate ways that these positive chemical buffers can be built up. First, positive relationships and social support from family, friends, neighbors, community groups or organizations can strengthen individual resilience. These not only help individuals address the stressors in their lives, but also improve mental well-being. Emotional support from meeting with people who share the same stress can also have a healing effect.

Secondly, personal habits that strengthen the mind (hobbies, relaxing activities, faith) and the body (proper nutrition, physical exercise) are crucial to addressing toxic stress. These activities

strengthen the body and helps maintain healthy organs, but they are also known to increase the “feel-good” hormones (e.g., melatonin) that help to buffer the high levels of stress hormones.

### How can CHWs work with women to address toxic stress?

For CHWs to address its consequences, it important they first understand the sources of the toxic stress. If stressors are current, the sources can be addressed directly. For example, with poverty related stressors related to basic needs of families, CHWs can work with families to identify the needs of the family, whether it is lack of shelter, food insecurity, or lack of health insurance. Helping families meet these needs can be accomplished through program services or referrals to local agencies. Social issues identified such as domestic violence or illicit drug use can also be screened for or identified through home visits and conversations with families and follow-up upon through program activities and referrals.<sup>25</sup> For past trauma or adverse childhood events, CHWs, though not trained to screen or address mental or emotional health issues, can initiate the conversations and encourage women or families to seek help through their provider. Basic training on the major Adverse Childhood Events (ACEs)<sup>1</sup> and screening tool can help CHWs recognize and direct women to the right providers.

Due to the severe effects of toxic stress, professionals are often needed to address some of the consequences, but the limited access to mental health providers within many communities in poverty makes it difficult. However, CHWs can do much to help address some of the sources of toxic stress. Much research has revealed that social support and a good social network is key to helping individuals dealing with the toxic effects of chronic stress. Because the body’s stress response system is worn out from stress, replenishing the body and giving it the

#### Adverse Childhood Events (ACEs) include:<sup>26</sup>

1. Abuse
  - a. Physical
  - b. Emotional
  - c. Sexual
2. Neglect
  - a. Physical
  - b. Emotional
3. Household Dysfunction
  - a. Mental Illness
  - b. Incarcerated Relative
  - c. Mother Treated Violently
  - d. Substance Abuse

#### Example of Social & Emotional Support <sup>24</sup>

A child who goes through her parents’ ugly divorce or loses a parent, experiences pain, but with the support of a loving adult, the effects of the stress can be reduced, minimizing long-term damage on the body and mind. This supportive adult can put the stress into context by explaining how it happened, how often it will happen or whether it will happen again. This is an important part of helping a child to see the world as less threatening and to provide her with a sense of empowerment and the capacity to influence her environment, even if only in a very small way.

<sup>1</sup> For additional information on ACEs, infographics and handouts, see the Robert Wood Foundation site at: <http://www.acesconnection.com/blog/handouts-for-parents-about-aces-toxic-stress-and-resilience?reply=438718675380916620#438718675380916620>

opportunity to recover is key to reducing poor health outcomes. The simplest method for addressing toxic stress is to remove or resolve the source of the stress. In some cases, this may be possible, but for the most part, stressors related to social issues such as discrimination, structural racism or poverty in general are not easily eliminated or addressed.

Clinical professionals alone cannot resolve the impact of toxic stress, since their time with patients is limited.<sup>21</sup> Community health workers, on the other hand, can take on the important role of initiating the efforts to address toxic stress among the families they work with. These efforts include working with families to:<sup>25, 27-32</sup>

- ☑ Identify the primary sources of chronic stress such as depression, excessive grief, intimate partner violence, external disasters, and other major stressors. Some of these stressors can be identified through program intake and screening forms, while others can be recognized through conversations with women and contact with families.
- ☑ Address the primary sources of chronic stress by ensuring access to health insurance, providing program services available and referring to the appropriate agencies. CHWs can encourage and prepare women to bring up issues with their health care provider for further screening, diagnosis and appropriate treatment. In some cases, the mothers or fathers are the sources of stress for children in the family. CHWs should be aware of the impact on children while working with the mothers to address the stressors.
- ☑ Use a strengths based approach and motivational interviewing to identify personal (resilience, hobbies), family (father of the child, grandmother) and community (neighbors, faith community) resources and support available. A conversation that begins with discussing strengths can lead to better understanding resiliency and potential sources of support within the family, friends or community.
- ☑ Identify ways of increasing positive interactions and activities to buffer stress, such as hobbies, mindfulness, support groups, and so on. CHWs can encourage the inclusion of family and non-family members during at all stages of a woman's reproductive life. By engaging their support, women and mothers can form critical, stable, growth-promoting relationships that can be critical buffers against toxic stress.
- ☑ Encourage behaviors that can help buffer the effects of toxic stress and improve overall health and wellbeing, including positive interactions with family, friends, social groups, physical activity and healthy eating.
- ☑ Address behavioral issues such as smoking, alcohol abuse and the use of illicit drugs through sharing of information on their effect on maternal and infant outcomes, providing information on cessation, and referrals for related programs.
- ☑ Follow-up with women to ensure continued encouragement and support as they work to address their life stressors.

CHWs work in communities where women face greater adversity and thereby greater exposure to risk factors. Therefore, it is important that they have access to training on methods for addressing toxic stress, appropriate screening tools, and information on various community resources available. Programs directed at promoting a healthy start for infants and children exposed to toxic stress risk factors have proven successful, as they engage the surrounding community, families, and resources within the area to help broaden mothers' networks.

### Examples of MIH Programs Successful at Addressing Toxic Stress

*Nurse Family Partnership*<sup>32</sup> is a program for prenatal intervention among women under conditions of adversity aimed at maintaining community engagement and ensuring proper action is taken by soon to be mothers. The program reports that their interventions have shown to have long-term, positive benefits on the children of mothers exposed to prenatal toxic stress. Results showed improvement in mental health of women as well as positive growth of family and community support, import buffers to toxic stress.

*Strong Beginnings*<sup>31</sup> is a federally funded Healthy Start program working with pregnant women and mothers of infants up to two years old. The program reports a 20% to 50% decrease in depression and stress scores for mothers enrolled, and a 92% program completion rate by participants. The program fosters a partnership between community health workers and therapists to provide both individual and group treatment to mothers experiencing toxic stress. The focus is on the use of a "for us, by us" method to reduce the influence of cultural barriers to addressing toxic stress, such as stigma associated with mental health.

#### How is resilience related to toxic stress? (American Academy of Pediatrics)<sup>24</sup>

Resilience is the process by which a person goes through a traumatic event or a very stressful situation using different protective factors for support. Resilience provides a shield between the person and the traumatic event, reducing potential negative effects such as long-term physical, emotional and behavioral issues.

Resilience can be fostered and developed through promoting protective factors such as social connections, concrete/tangible help in times of need, and social and emotional strength.

The primary factor in resilience is having **caring and supportive relationships within and outside the family.**

**Sample Questions:** For prompting women for what they may have forgotten or not yet shared:<sup>7</sup>

*“Has your home life changed in any significant way (e.g., moving, new people in the home, people leaving the home)?”*

*“Since the last time I saw you, has anything really scary or upsetting happened to you (your child) or anyone in your family?”*

*“Are there any behavior problems with the child at home, at childcare or school, or in the neighborhood?”*

*“How do you deal with stress?”*

*“Has anything bad, sad, or scary happened to your child recently?”*

*“Did anything bad, sad, or scary happen to you as a child?”*

**Sample Questions:** When trying to identify domestic violence, substance abuse, or child abuse, it may be necessary to be more direct. This includes framing around a concern.<sup>7</sup>

- *“You have told me that your child is having difficulty with aggression, attention, and sleep. Just as fever is an indication the body is dealing with an infection, when these behaviors are present, they can indicate the brain and body are responding to a stress or threat. Do you have any concerns that your infant/ child is being exposed to stress or something that would be scary to him?”*
- *“The behaviors you describe and the trouble she is having at childcare are very common. However, they are also sometimes warning signs that the brain is trying to manage a stress or threat. For example, sometimes children respond this way if they are being harmed or if they are witnessing others they care about being harmed. Do you know of violence exposure with friends, at home, or in the neighborhood?”*
- *“So what you are describing to me may be related to stress. Do you feel safe at home? Do you think your child feels safe at home? At childcare or preschool? Playing in the neighborhood?”*

It is important to mention that you are having these conversations about exposure to trauma with all families because it is so prevalent. Explain that stressful situations or trauma occur in all types of families regardless of race, culture, or socioeconomic status. This helps to reduce stigma and establishes it as a normal part of the assessment and a true health-related issue.<sup>7</sup>

**Potential Signs of Toxic Stress:<sup>7</sup>**

***In Babies:***

Clingy/separation anxiety  
Flat affect—no joy  
Little play, exploration, mood  
No preferred caregiver  
Failure to thrive  
Irritable, unable to soothe

***In Toddlers***

Biting, kicking, tantrums  
Unprovoked aggression  
Not interested in toys  
No preference of caregivers  
No appetite  
Developmental regression  
Language delay  
Sexualized behavior  
Easily startled  
Lack of exploration

**Tips for helping children under chronic or traumatic stressful situations:<sup>33</sup>**

- Build them up – it takes 5 to 7 positive interactions to make up for 1 negative interaction.
- Touch – it’s connecting, reassuring and helps to build a protective barrier.
- Find them an escape – if the home is stressful, children (and adults) need a temporary escape such as a hobby, sports, time with friends or other family.
- Be responsive – warmly responding to a child’s attempts at interaction.
- Strengthen the brain – for anyone exposed to toxic stress, anything that builds the brain is critical difference: proper nutrition, physical activity, mindfulness and connecting with supporting, loving others.
- Mindfulness – can provide some resilience against the effects of toxic stress and improves the general physical and emotional well-being.  
(For more information: [mindfulness for adults](#) or [mindfulness for children](#) )

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