

# STRONG Children and Families Model for Change

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## Aligning State, Regional, and Ballad Health Goals

Ballad Health, the State of Tennessee, and the Commonwealth of Virginia have together ventured into a visionary approach to reduce healthcare costs, improve access to care, reduce disparity and inequity and improve health in Northeast Tennessee and Southwest Virginia. Without exception, each party has acknowledged this unprecedented generational opportunity to create sustainable advantages for the people we mutually serve even in the midst of significant challenges faced by this rural region of Central Appalachia. The primary purpose of this paper is to demonstrate how alignment of the goals of the states with the goals of the Northeast Tennessee and Southwest Virginia region and Ballad Health will ensure the achievement of sustainable advantage by focusing on strong children and families.

In regard to regional challenges, both states recognize the burden of disease in our region is higher than national and state averages, especially related to diabetes, cancer, stroke, hypertension, cardiovascular disease, substance abuse, and premature death. The states have also noted a number of other factors contributing to a unique and challenging environment for health in the region. A number of these relate to the social determinants of health as root causes of poor health, having disproportionate impact in the Ballad Health geographic service area. Factors such as education, children in poverty, per capita income, median household income, stagnant population growth, and rurality are strongly associated with health disparity.

Both Governor Bill Lee and Governor Ralph Northam have set forth compelling visions with great application to these regional challenges. In his inaugural address, Governor Lee stated in regard to such issues, “These are the challenges of our day, and history will judge us based on how we meet them.” To that end, he set forth priorities consistent with what is needed to advance our region including K-12 education, criminal justice, mental health, healthcare, and rural economic development—clearly recognizing that we must start early in life to address the root causes of educational, economic, and health success.

In March 2019, Commissioner Lisa Piercey affirmed in the *Jackson Sun* that “when you talk about hypertension, stroke, heart disease, and even COPD, it’s habits that start in childhood.” While stating clear priorities to address the opioid epidemic and the big four (physical inactivity, excessive caloric intake, tobacco use, and substance issues), she clearly stated an upstream approach. “We know, she said, “when babies have a healthier start, they’re more likely to be healthier when they grow up.”

Similarly, in regard to his priorities, Governor Northam stated to budget conferees that, “In order for every Virginian to thrive, we must invest in their success and that requires a greater focus on issues of equity.” He reinforced a focus on children and schools with the greatest needs, saying that we must “lift rural parts of the state where Virginians have not seen the same economic growth of the more populous, urban regions.”

A clear sign of this support is the leadership of the governor's team in planning the Rural Summit on Childhood Success in Abingdon in May and the further affirmation of priorities stated by Commissioner Norman Oliver. In October 2018 in *The Daily Progress*, Commissioner Oliver stated that we must "tackle social issues that if unaddressed will continue to cause health problems to fester." "We're looking," he said, "at behavioral health, and along with it I'd add substance abuse...We're looking at women's health and children's health, particularly early childhood...One of the best ways to tackle those issues is by addressing societal issues that have their root in racism and poverty..."The department is distributing more long-acting reversible contraceptives and considering ways to help children get healthy food and work through traumatic experiences."

Ballad Health is equally committed to finding long-term solutions to address these issues. *Using Accountable Care Community and Ballad Health infrastructure, we will prepare new generations to be college and career ready through a concerted focus on economic vitality, educational attainment, and healthier living, with special attention on vulnerable children and families.*

## Guiding principles:

### 1. Achieve long-term impact

Ballad Health fundamentally believes that a long-term approach is the only effective approach to address the challenges articulated by the state. The issues set forth are a part of the culture of the region, developed and engrained in perceptions, attitudes, and behaviors over decades and generations. To effectively address these issues, time, focus, and significant resource leverage will be required.

### 2. Focus and align resources

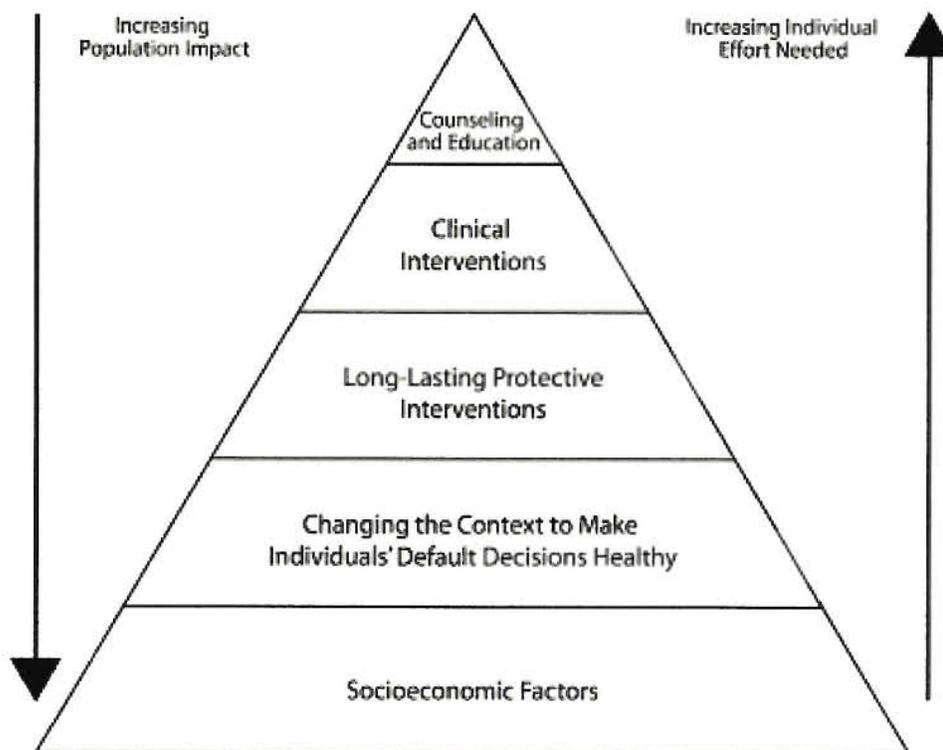
Ballad Health's position, and the position of virtually all key stakeholders in the region, including the COPA Local Advisory Committee, together with national experts, is that focus is essential to success. Initiatives and investments spread over too many areas of focus and too broad a geography will not derive the desired benefits. For example, the population health investment of \$75,000,000 over ten years only equates to \$8 per person per year if applied to everyone in the geographic service area (population size of 926,840).

By focusing our efforts and utilizing Ballad's investment to advance collective impact derived through the Accountable Care Community we can align and scale the resources of partners—including clinical programs, state programs, payer programs, and community organizations.

### 3. Focus upstream and on root causes

To achieve lasting, sustainable change it is essential to focus on root causes and upstream of disease. Most poor behavioral choices are driven by cultural norms and adverse life experiences and amount to either environmental default choices or poor coping mechanisms. Failure to focus on root causes may result in temporary improvement, but not lasting change. Using the example above, a focus on the children of our region would increase spending from \$8 per person to \$38 per person per year (population size of 196,360 children). Further, focusing on at-risk children increases the potential spend to more than \$200 per year based on the 19% of regional children (Tennessee estimate) estimated to have more than 3 risk factors (Columbia University National Center for Children in Poverty Young Child Risk Calculator).

The more we can focus and align resources, the more we can multiply that investment to a population level of effective impact. The following graphic demonstrates that a focus on root causes increases population-level impact, reducing the need for substantial individual reach and effort, which are inherently more difficult to achieve and resource.



A Framework for Public Health Action: The Health Impact Pyramid, Thomas R. Frieden, [American Journal of Public Health](#). 2010 April; 100(4): 590–595.

### A Generational Opportunity:

During the merger process, the leaders of our community recognized the generational opportunity presented by uniting the two regional health systems and refocusing resources

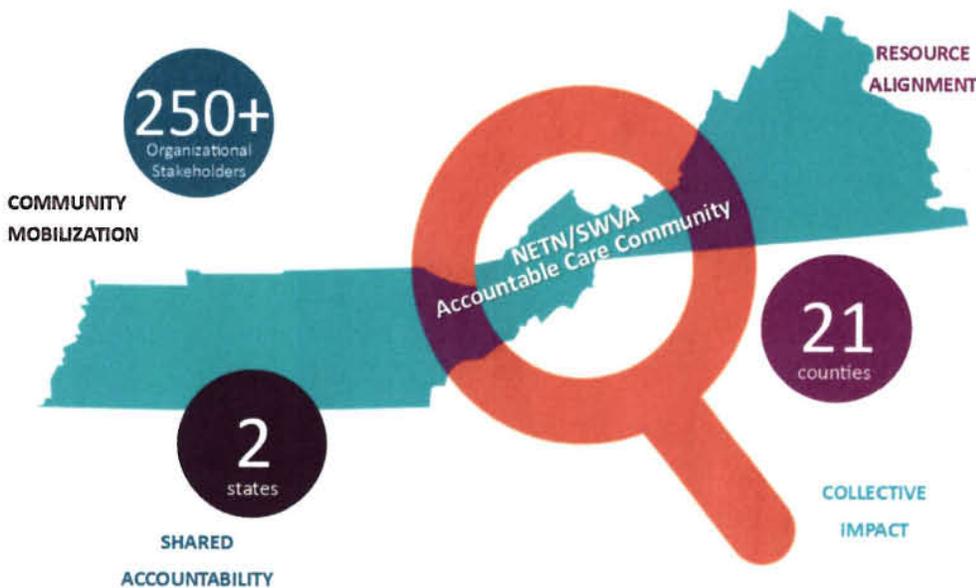
away from unnecessary duplication to investments in the life and health of the region. Now we stand at a second juncture in regard to defining public advantage long-term.

Ballad Health, Healthy Kingsport, and United Way of Southwest Virginia have worked as facilitator organizations to form an unprecedented multi-sector, multi-state Accountable Care Community (ACC). In just eight months, more than 250 organizations from 21 counties have joined forces with a commitment to deploy their resources and influence to achieve collective impact around a set of focused objectives.

## The Accountable Care Community

# STRONG

Striving Toward Resilience & Opportunity  
for the Next Generation



The ACC reviewed regional hospital and health department community health needs assessments, along with state health plans, COPA and Cooperative Agreement Measures, and the Southwest Virginia Health Authority Blueprint for Health Enabled Prosperity. After this, they unequivocally identified that a focus on the relationship between education, income, and health and the root causes or underpinnings of success in these areas would result in the most impact over time. They see long-term impact as applying collective impact to disrupt damaging patterns and break negative generational cycles that ultimately result in a variety of social ills, including poor health and premature death.

Using age categories and success metrics related to each, we see a unique opportunity to align Ballad Health resources and community resources to scale best and promising practice approaches significantly enough to shape the region's health and well-being long-term.

Inherent to this will be a disciplined approach to studying and understanding the effects of specific programmatic interventions over time along with the cumulative effects of the effort.

The Accountable Care Community has themed their work as STRONG—Striving Toward Resilience and Opportunity for the Next Generation. The continuum they have identified spans STRONG Starts, STRONG Youth, STRONG Teens, and STRONG Families (to address key relationships and environments).

Through the ACCs next steps, they will solidify strategies and initiatives overall and by sector which address these priority focus areas across the lifespan. Timing is perfect to align Ballard’s validated COPA and Cooperative Agreement priorities with the ACC.



The ACC identified a primary focus on at-risk children who have experienced or are likely to experience Adverse Childhood Experiences (ACEs) and their families or support networks. They seek to answer this question:

*What can our region accomplish with an “all hands on deck” approach to the resources these children need to develop resilience, overcome their circumstances, and succeed in life?*

This area of focus is fueled by issues which impact the life, health, and safety of everyone in this region without exception, as we all experience life together in society. It is also fueled by a national recognition that ACEs are the underpinning of many societal issues which repeat generation to generation but that there are promising approaches which work to change the trajectory for children and families in a more positive direction—to prepare new generations for college and career readiness.

Key impact milestones such as Kindergarten Readiness, Third Grade Reading Proficiency, and High School Graduation have been identified as long-term predictors of educational success, economic vitality, and health.

We have a generational opportunity to capitalize on the significant influence the Accountable Care Community can bring to bear and to truly derive public advantage in its most meaningful sense for the people of our region.

## Why focus on Childhood Experiences?

A study by The Sycamore Institute revealed that the annual medical and productivity cost associated with Adverse Childhood Experiences (ACEs) in Tennessee is \$5.2 billion per year. Based on that, the annual cost to the Ballad Health geographic service area is at least \$730 million per year. The study further concluded that:

- ACEs can increase a person's risk of health, social, and economic problems throughout life
- In 2017, ACEs among Tennessee adults led to an estimated \$5.2 billion in direct medical costs and lost productivity from employees missing work. Further, they concluded that 32% of smoking, 49% of depression, 13% of obesity, 10% of diabetes, 21% of COPD, 24% of Asthma, and 5% of hypertension was directly attributable to ACEs.
- ACEs are associated with risky health behaviors and poorer health outcomes.
- Over half of adult Tennesseans reported at least one ACE between 2014 and 2017, and about 17% had experienced 4 or more.

According to Dr. Robert Block, former president of the American Academy of Pediatrics, ACEs are "the single greatest unaddressed public health threat facing our nation today."<sup>1</sup> People with an ACE score of 6 or higher are at risk of their lifespan being shortened by 20 years<sup>2</sup>. Studies show that for every \$1 invested in ACEs prevention, \$7 will be returned in lifetime earnings, taxes, health cost savings, and public service savings<sup>3</sup>. The developing brain and its exposures is the key to most of the habits and patterns we will experience in life, whether good or bad.

Even in the womb, the stresses of a mother affect the developing brain and body of her baby<sup>4</sup>. These effects ultimately lead to coping responses for us as children and adults. ACEs have been

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<sup>1</sup> Harris, N.B. 2014. Nadine Burke Harris: How childhood trauma affects health across a lifetime. *TEDTalks*. [http://www.ted.com/talks/nadine\\_burke\\_harris\\_how\\_childhood\\_trauma\\_affects\\_health\\_across\\_a\\_lifetime?share=19391661a0](http://www.ted.com/talks/nadine_burke_harris_how_childhood_trauma_affects_health_across_a_lifetime?share=19391661a0).

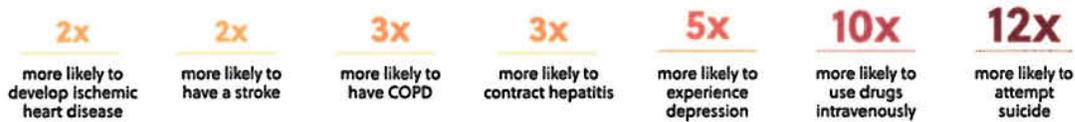
<sup>2</sup> Leitch, L. 2017. Action steps using ACEs and trauma-informed care: a resilience model. *NCBI*. 10.1186/s40352-017-0050-5.

<sup>3</sup> Tennessee Commission on Children and Youth. 2018. What are ACEs?. <https://www.tn.gov/content/dam/tn/tccy/documents/ace/ACEs-Handout.pdf>.

<sup>4</sup> Johnson, SB., Riley, AW., Granger, DA., Riis, J. 2013. The Science of Early Life Toxic Stress for Pediatric Practice and Advocacy. *NCBI*. 10.1542/peds.2012-0469.

connected directly to socioeconomic and health disparity later in life and even to premature death<sup>5</sup>. People with low income and limited education are more likely to experience ACEs and to repeat negative patterns within their own families<sup>6</sup>.

Research by Kaiser Permanente and the Centers for Disease Control showed that ACEs scores are correlated with health outcomes. Children and adults with high scores (4 or more) are:



The economic and societal cost for failure to address ACEs is high and impacts everyone in the community. Individuals with high exposure to ACEs and little personal support to develop resiliency are significantly more likely to commit crimes, be underemployed or unemployed, develop addictions to tobacco, drugs, and alcohol, and have poor health leading to premature death by as much as twenty years earlier than average<sup>7</sup>.

People have an ACE score of 0 to 10. Each type of trauma counts as one, no matter how many times it occurs. You can think of an ACE score as a cholesterol score for childhood trauma. For example, people with an ACE score of 4 are twice as likely to be smokers and seven times more likely to be alcoholic. Having an ACE score of 4 increases the risk of emphysema or chronic bronchitis by nearly 400 percent, and attempted suicide by 1200 percent. People with high ACE scores are more likely to be violent, to have more marriages, more broken bones, more drug prescriptions, more depression, and more autoimmune diseases<sup>8</sup>.

<sup>5</sup> Monnat, SM., Chandler, RF. 2015. Long Term Physical Health Consequences of Adverse Childhood Experiences. *NCBI*. 10.1111/tsq.12107.

<sup>6</sup> Hair, NL., Hanson, JL., Wolfe, BL., Pollak, SD. 2015. Association of Child Poverty, Brain Development, and Academic Achievement. *NCBI*. 10.1001/jamapediatrics.2015.1475.

<sup>7</sup> Reavis, JA, et al. 2013. Adverse Childhood Experiences and Adult Criminality: How Long Must We Live before We Possess Our Own Lives?. *NCBI*. 10.7812/TPP/12-072.

<sup>8</sup> Sciaraffa, M. 2017. Research Update for Practitioners: The ACE Study. *National Council on Family Relations*. <https://www.ncfr.org/cfle-network/summer-2017-ACEs/research-update-practitioners-ace-study>.

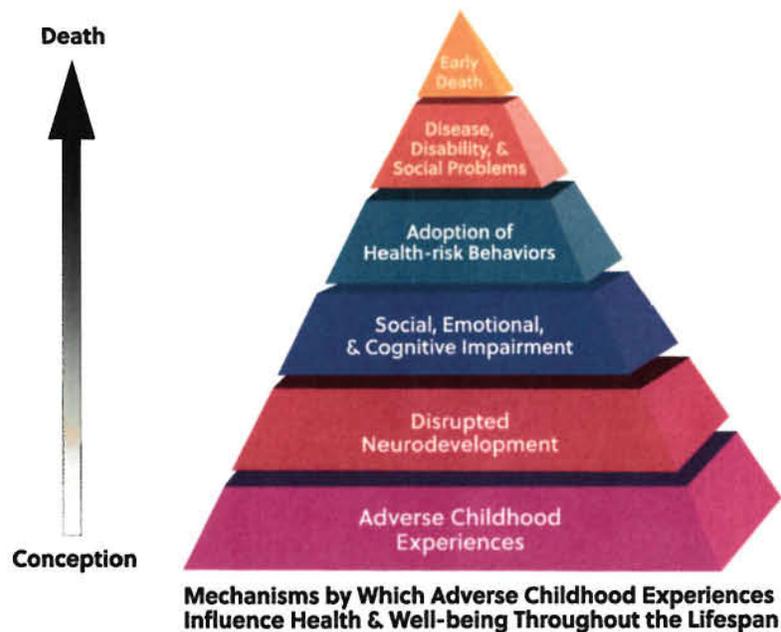


Figure 1 SAMHSA. <https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences>

The Kaiser CDC ACE Study revealed the following main discoveries:

- ACEs are common...nearly two-thirds (64%) of adults have at least one.
- They cause adult onset of chronic disease, such as cancer and heart disease, as well as mental illness, violence, and being a victim of violence
- ACEs don't occur alone....if you have one, there's an 87% chance that you have two or more.
- The more ACEs you have, the greater the risk for chronic disease, mental illness, violence, and being a victim of violence.
- ACEs are responsible for significant workplace absenteeism, and for costs in health care, emergency response, mental health, and criminal justice.
- Childhood adversity contributes to most of our major chronic health, mental health, economic health, and social health issues.
- On a population level, it doesn't matter which four ACEs a person has. The harmful consequences are the same. The brain cannot distinguish one type of toxic stress from another. It's all toxic stress, with the same impact.

### Biological Response to Adverse Childhood Experiences

“Children are especially sensitive to repeated stress activation because their brains and bodies are just developing,” said Dr. Nadine Burke Harris, pediatrician, in a 2014 TEDMED talk. “High doses of adversity not only affect brain structure and function, they also affect the developing immune system, developing hormonal systems, and even the way our DNA is read and transcribed.” Studies have shown clear differences in brain scans of those with ACEs caused by

chronic stress and those who did not experience chronic stress. Chronic stress changes the hippocampus, prefrontal cortex, and amygdala, which impacts self-regulation, decision making, stress management, and processing memories, emotions, and fear.

Children with ACEs activate fight-or-flight stress response (FFSR) more frequently than children who do not have ACEs. This response causes the blood vessels to tighten so blood flow is lessened, the digestive system stops to conserve glucose, neck, shoulder, and back muscles constrict, bronchial tubes constrict to conserve oxygen, and the heart rate increases to push more blood to large muscles.

Today, when people activate the FFSR, most people do not fight or run, so all hormones and the side effects build up to become toxic stress because there is no way to expend these responses. Not expending the FFSR hormones causes stomach problems, migraines, skin rash, hair loss, racing heartbeat, muscle aches, sleep problems, changes in eating, dizziness, and more. Down the road it may cause multiple mental and physical health issues. Mental Health issues include anxiety, depression, and difficulty concentrating.

Children, teens, and adults will also struggle to develop neural networks which help them cope with these issues in a healthy way, meaning even in situations where a problem that is easy to solve arises, the FFSR activates and they respond in survival mode with reactionary coping skills (yelling, acting physically, shutting down, lashing out, etc.)<sup>9</sup> Increased ACEs scores and early life stress increased the risk of hospitalization for autoimmune diseases by 70% and 100% for rheumatic diseases<sup>10</sup>. Of those studied with ACEs, 10% developed cancer<sup>11</sup> and individuals with five or more ACEs were 2.6 times more likely to develop COPD<sup>12</sup>. For each ACE the rate of number of prescription drug abuse increases by 62%<sup>13</sup>, children with 5 more ACEs are 2 times more likely to smoke<sup>14</sup>, and people with 6 or more ACEs have 24 times increased odds of attempting suicide<sup>15</sup>.

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<sup>9</sup> Fredericksen, L. 2018. The Developing Brain and Adverse Childhood Experiences. *ACEs Connection*.

<https://www.acesconnection.com/blog/the-developing-brain-and-adverse-childhood-experiences-aces>.

<sup>10</sup> Dube, SR, et al. 2009. Cumulative Childhood Stress and Autoimmune diseases in adults. *NCBI*. 10.1097/PSY.0b013e3181907888.

<sup>11</sup> Brown, MJ., Thacker, LR., Cohen, SA. 2013. Association between Adverse Childhood Experiences and Diagnosis of Cancer. *NCBI*. 10.1371/journal.pone.0065524.

<sup>12</sup> Andra, RF, et al. 2008. Adverse Childhood Experiences and Chronic Obstructive Pulmonary Disease in Adults. *NCBI*. 10.1016/j.amepre.2008.02.002.

<sup>13</sup> Dube, SR, et al. 2003. Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: the adverse childhood experiences study. *NCBI*. <https://www.ncbi.nlm.nih.gov/pubmed/12612237/>.

<sup>14</sup> Anda, RF, et al. 1999. Adverse childhood experiences and smoking during adolescence and adulthood. *NCBI*. <https://www.ncbi.nlm.nih.gov/pubmed/10553792>.

<sup>15</sup> Dube, SR, et al. 2001. Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. *NCBI*. <https://www.ncbi.nlm.nih.gov/pubmed/11754674>.

## Resilience as an Antidote to ACEs

The ability of a child to develop resilience is an antidote to mitigate the negative effects of ACEs long-term. As a society, we can increase the chances that children have the resources needed to develop resilience or internal coping skills, including mentoring or buffering as a way to provide protective factors such as comfort, encouragement, life-skills coaching, stress management and the like. But, in many communities, especially underserved communities, these resources are not accessible<sup>16</sup>.

Researchers are still trying to understand all that is involved in resiliency, many even argue on what the definition of resiliency should be. Although, many agree there are multiple areas that contribute to resiliency including caring relationships with caregivers and other adults, parents who are resilient, constructive parenting skills, opportunities to socialize, support for parents and families, supportive communities, and encouraging a feeling of personal value. Protective factors are also important to give children a sense of comfort after toxic stress has occurred. These actions can help stop the physical responses of FFSR, thus protecting the growing body and brain, allowing the child to develop normally. If the protective factors are not in place, the risk of developing the issues mentioned earlier increases, especially when the trauma is long lasting and strong<sup>17</sup>.

There are notable community based approaches developing locally and nationally that are designed to buffer the effects of ACEs by creating more supportive, nurturing, protective environments for children and to help families and care givers reduce chronic stress and build resiliency<sup>18</sup>. A growing science, and our own experience in society, reinforces the importance of the family in supporting primary prevention and improving long-term health outcomes. In the article Family-Focused Public Health, published in *Frontiers in Public Health* on March 20, 2019, the authors state that “while research has revealed the impact of adverse childhood experience on health and well-being across the life-course, other findings have shown the effect of positive experiences, primarily through the family. Studies indicate that families can produce positive health outcomes through optimal youth and child development by building protective factors such as parental resilience, social connections, knowledge of parenting and child development, concrete support in times of need, and social and emotional competence in children” –as illustrated below. Thus, a focused effort on equipping children and families for success would net the most positive long-term results in community health.

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<sup>16</sup> Brinker, J., Cheruvu, VJ. 2016. Social and emotional support as a protective factor against current depression among individuals with adverse childhood experiences. *Science Direct*. 10.1016/j.pmedr.2016.11.018.

<sup>17</sup> Minnesota Department of Health. Resilience to ACEs.  
<https://www.health.state.mn.us/communities/ace/resilience.html>.

<sup>18</sup> Bethell, CD, et al. 2018. Methods to Assess Adverse Childhood Experiences of Children and Families: Toward Approaches to Promote Child Well-being in Policy and Practice. *NCBI*. 10.1016/j.acap.2017.04.161.

## The Opioid and Substance Abuse Crisis as a Barrier to Resiliency

Today, the opioid crisis is placing what feels like an insurmountable strain on the systems in place to serve children and families.

The relationship between ACEs and substance abuse is clear, and they perpetuate one another. Because of the extent of the opioid crisis in our region, we cannot hope to address one without addressing the other. Generational childhood trauma is an attributed root cause of the opioid crisis in America, and a new generation is now experiencing ACEs because of the substance abuse of their parents and other caregivers as noted in a brief by the Campaign for Trauma-Informed Policy and Practice—“Trauma-Informed Approaches Need to be Part of a Comprehensive Strategy for Addressing the Opioid Crisis”.

In her editorial in the *Journal of Pediatric Health Care* from 2018, Opioids: A Pediatric Epidemic, Martha K. Swartz states that “parental substance abuse has clearly emerged as an ACE that puts children at risk for the negative impact of opioid abuse as well as increasing the risk for opioid use and misuse by older children and teens.”

Swartz points out that the number of children in foster care has risen steadily since 2012, and over 40 % of children in relative foster homes are there because of substance abuse. In addition, as much as 86% of pregnancies among women who struggle with addiction are considered unintended. “These children,” she states, “are more likely to receive delayed or insufficient health care, and are at greater risk for low birth weight and subsequent physical or mental health problems.” Far too many children are not being raised by their parents because of the adverse effects of substance abuse.

The graphic below illustrates the inverse relationship between positive and adverse childhood experiences. Community based solutions which contribute to the development of resiliency and buffer the negative impact of ACEs by supplying protective factors such as mentoring may be the only answer for some children—especially those whose families have been hit hard by the opioid crisis.



## **A Collaborative Approach:**

Based on the convictions of the Accountable Care Community it makes the most sense to discuss focusing COPA and CA resources on a Conception to Career Continuum to positively affect the early experiences of every developing child in our region, identify at-risk children and families with significant ACEs, and create a community-wide approach to changing the trajectory of their lives.

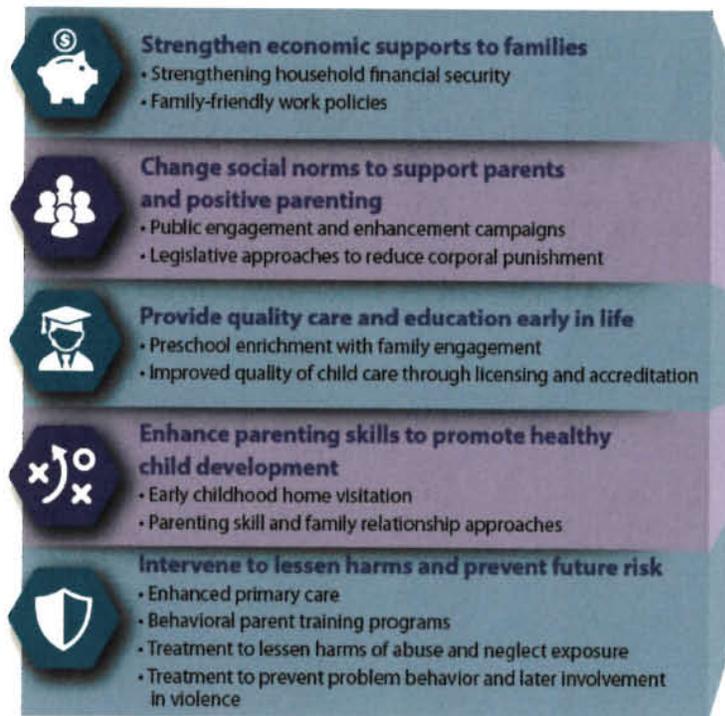
**The ACC recognizes the importance of Ballad Health focusing its resources in four priority areas which can be effectively aligned with the ACC's goals:**

- 1. Increasing positive birth outcomes**
- 2. Increasing educational readiness and performance**
- 3. Increasing community understanding and response to at-risk children and families**
- 4. Increasing healthy behaviors in children, youth, and their support systems**

Ballad has the opportunity to create programming for all children born in the region and their support systems. The priority population would be at-risk children and/or families with significant ACEs. At-risk children and families would be identified through our birth centers and their associated 6500 annual births, along with referrals from community partners such as schools, medical practices, substance abuse treatment facilities, courts, foster care, etc.

The vast majority of births in our twenty-one county region occur within Ballad hospitals, giving us a unique opportunity to connect with every family, to conduct appropriate screening for risk, including ACEs, substance abuse, health issues, and social needs and to connect them through relational navigation to appropriate, evidence-based intervention programs based on need. These programs would be delivered through Accountable Care Community and other partners with Ballad funding and aligned ACC resources addressing program gaps where needed. Through a relationship driven model, we would become an ongoing trusted resource to support the development of these children and their supportive relationships through the STRONG continuum from conception to college and career readiness.

This concept mirrors the framework adopted by the Center for Disease Control and Prevention to use when developing programs and policies to prevent ACEs (diagram below).



Source: <https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/ace-graphics.html>

The Accountable Care Community's goals for the first ten years focus on developing STRONG children and STRONG families (adults and caregivers) while emphasizing substance abuse and behavioral health. By focusing our collective efforts and utilizing Ballard's investment, we believe we can align and scale the resources of our partners and the states to achieve our common goals.

## **Longitudinal Study**

A significant purpose of the Ballad Health merger is to create new academic and research opportunities in the region both to better understand the rural environment we serve and to attract outside research support. With funding from Ballad Health and the State of Tennessee as authorized in the governor's budget, The Center for Rural Health Research and Access (CRHRA) has been created with the East Tennessee State University (ETSU) College of Public Health and potentially other academic partners in Tennessee, Virginia, and elsewhere. This center will utilize the existing infrastructure and personnel expertise within the School and across the University and will strategically add capabilities.

The detail and evidence outlined earlier offers a compelling opportunity for national caliber research to enhance understanding of long-term intervention impacts. Working with the CRHRA and academic partners in TN, VA and elsewhere, we will study the effect of applying a package of high impact, lower cost interventions to create a comprehensive community-based solution to improve childhood experiences. While many of the interventions set forth nationally for improving childhood experiences, enhancing resiliency, and improving educational and societal outcomes are deemed promising, a long-term study has not been conducted to prove their efficacy. We have the opportunity to utilize Ballad Health research funding and academic partnerships to conduct a landmark project with the impact of studies like the Framingham cardiovascular study.

This study also supports ongoing multi-faceted evaluation of the focused approach for Ballad Health's population health efforts. Through that approach, the states will have a mechanism to better understand ongoing public advantage through an active supervision framework that is further informed by the study. This approach will create an ongoing mechanism for evaluation and refinement of programmatic approaches. It will also provide a long-term mechanism to study the effects of interventions on program outcomes and impacts.

## ***STRONG Children and Families Model for Change Addendum:*** **Considerations for Adult Population Health**

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While the focused approach details a primary focus on children, measures associated with the health and well-being of adults and caregivers are still included and extremely important.

The long-term measures of Adult Smoking and Drug Deaths will be important to creating models of good health for children but will also require programmatic interventions which will support adult health. According to the Centers for Disease Control and Prevention, tobacco use is the leading preventable cause of premature death, where smokers die at least 10 years sooner than their non-smoking counterparts. Reducing adult smoking rates will positively impact quality and longevity of life for a significant percentage of adults in our region. Quitting smoking by the age of 40 reduces death to smoking related illness by 90% ([www.cdc.gov](http://www.cdc.gov)). Reduction of adult smoking rates also contribute a strong return on investment in health cost savings by reducing rates of adult cardiovascular disease, pulmonary disease, and cancer and years of life lost to the effects of smoking. According to a 2017 Health Affairs article, "Smoking-related diseases accounted for more than half of the life-expectancy gap between Appalachia and the rest of the country." It is also well-established that parental smoking is associated with adolescent smoking initiation and regular use of tobacco. For instance, in 2014 in the Journal of the American Academy of Pediatrics, Mays and colleagues explained that children of nicotine dependent parents were "susceptible to more intense smoking patterns and the risk increased with longer duration of exposure.....exposure to parental nicotine dependence is a critical factor influencing intergenerational transmission of smoking". We understand that to prevent initiation of tobacco use, a multi-pronged approach that includes adult cessation and supports is imperative.

The National Institute of Drug Abuse states that drug related deaths in the country have more than doubled since 2000 and are continuing to rise. Even with the small decline of opioid use, overdose deaths continue to climb. The same 2017 Health Affairs article stated that, "drug-overdose mortality in the period 2005–13 was substantially higher and increased more rapidly in Appalachia, compared to the rest of the country. Additional decomposition analyses indicated that drug overdose accounted for 5.1 percent of the life expectancy gap in 2005–08. This seems to suggest that drug overdose is becoming an increasingly important determinant of the widening life-expectancy gap between Appalachia and the rest of the country".

Reducing drug deaths in the region will require a host of programmatic interventions aimed at substance abuse in adults which will both reduce the prevalence of substance abuse, the harm it causes to individuals as well as the resulting social costs. One illustrative example is the rate of children entering foster care because of parental drug abuse. This rate increased by 53% from 2007-2017 according to the Child Trends' analysis of data from the Adoption and Foster Care Reporting System. All of the programs and interventions necessary to affect tobacco use and drug death also provide touch points to identify other health-related social needs of the family and better meet them through more supportive environments.

In addition to the efforts set forth specifically for Population Health, other efforts associated with Access and Quality metrics have a significant impact on adult health, as do Value Based Contracts which focus on health improvement for adult populations and strategies set forth in the behavioral and rural health plans.

Similar to Population Health, there are a large number of explicit measures for evaluation in the COPA and Cooperative Agreement which focus on adult populations. Populations impacted include those in Medicare Advantage, MSSP, and Ballard Health Team Members. These areas of emphasis create better access to care, prevention, and disease management services for adults.

- The Access and Quality Measures require a host of clinical interventions to improve the health of adults especially in the realm of primary prevention and harm reduction. They provide an important opportunity to optimize the clinical environment to support the overall health of the adult population in the region through early identification of diabetes, hypertension, and cancer and through better access to and management of substance abuse and behavioral health issues in the adult population. All access measures, with the exception of three measures (Pediatric Readiness, Asthma 0-5, Asthma 6-14), address adult health.
- The Behavioral Health and Rural Health plans include important adult access to resources for adults, including increasing primary care access, addiction recovery support, team-based care, and navigation.
- Value Based Contracts which are an important part of our vision with specific requirements set forth in the COPA and Cooperative Agreement have a significant focus on adults, including some strong overlap with the Access and Population Health measures together with additional areas of focus such as flu vaccines for older adults, blood pressure control, diabetes management, care for older adults, and medication adherence. In addition, our approach as a health system and the Value Based Contracts are moving more toward addressing the social needs of adult populations as a support for health.