



**ZERO TO THREE**  
Early connections last a lifetime



# **An Overview for the State of Vermont Green Mountain Care Board**

**August 3, 2017**



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# The Science of Early Childhood Development



# Nurturing Healthy Brain Development From Birth



Early Experiences Matter



# Babies Gain Knowledge at a Staggering Rate



***Over 1 Million New Connections Every Second***



**newborn**

**1 month**

**3 months**

**6 months**



# The Science: Nature AND Nurture



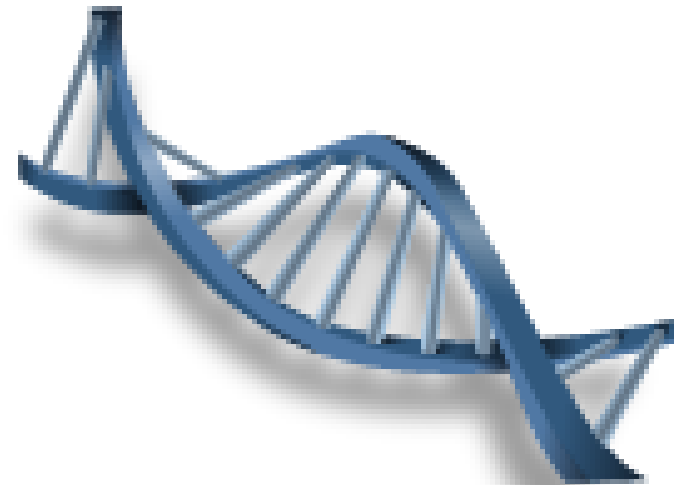
- **Nature**
  - Genetically “pre-programmed” cell production and migration
  - Inherited conditions can influence this process
- **Nurture**
  - Experience shapes brain development
  - Experience influences the expression of genetic information



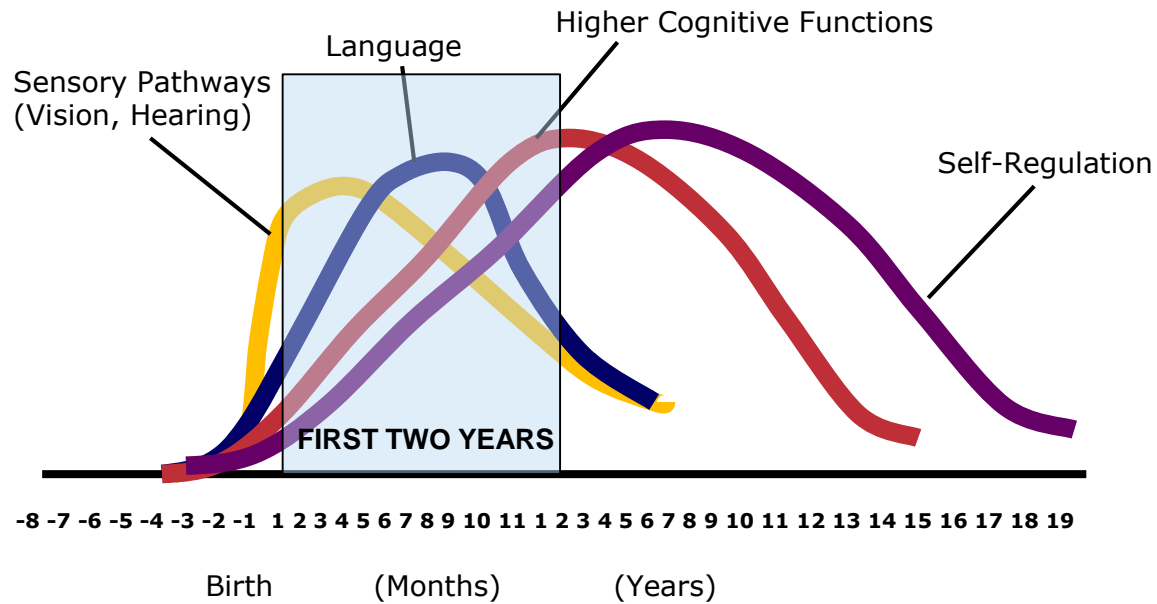
# Early Experiences Can Alter Gene Expression



- Healthy organ development – including the brain – depends on how and when certain genes are expressed
- How they turn on and off, and whether they are expressed at all, is influenced by early experiences
- Adverse early experiences can cause adaptations that increase the risk of:
  - Poor physical and mental health outcomes
  - Impairments in future learning capacity and development



# Learning Takes Place At Key Time Periods



Source: C. Nelson (2000)





Healthy brain connections depend on healthy human connections and positive early learning experiences



# Babies Need Attention and Connection



# Young Children Can Face Many Risk Factors



22%

22% of children under age 3 experience residential mobility



21%

21% of households with children under age 6 are food insecure



11%

11% of children under age 3 have parents with low educational attainment

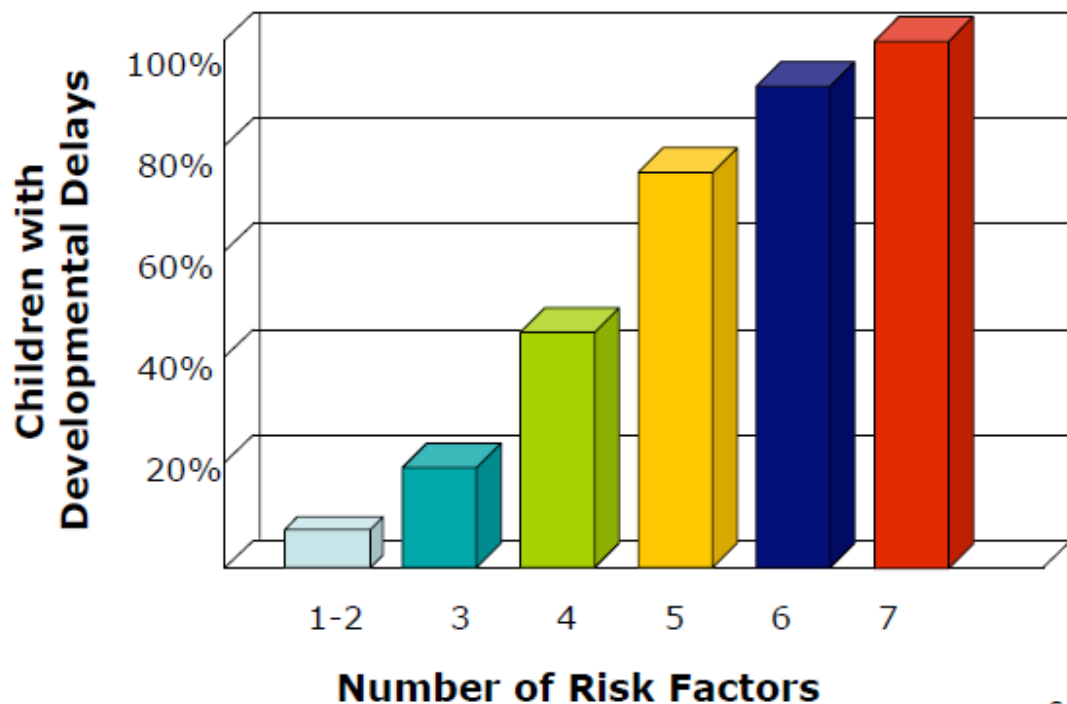


28%

28% of child maltreatment victims are under age 3



# Significant Early Childhood Adversity Impairs Early Development



## RISK FACTORS EXAMINED:

- Maltreatment
- Minority status
- Single caregiver
- Poverty
- Domestic violence
- Caregiver substance abuse
- Caregiver mental health problem
- Low caregiver education
- Biomedical risk condition
- Teen-aged caregiver
- 4 or more children at home

Source: Barth et al. (2008)



# Early Childhood Adversity Has Lifelong Health & Social Consequences

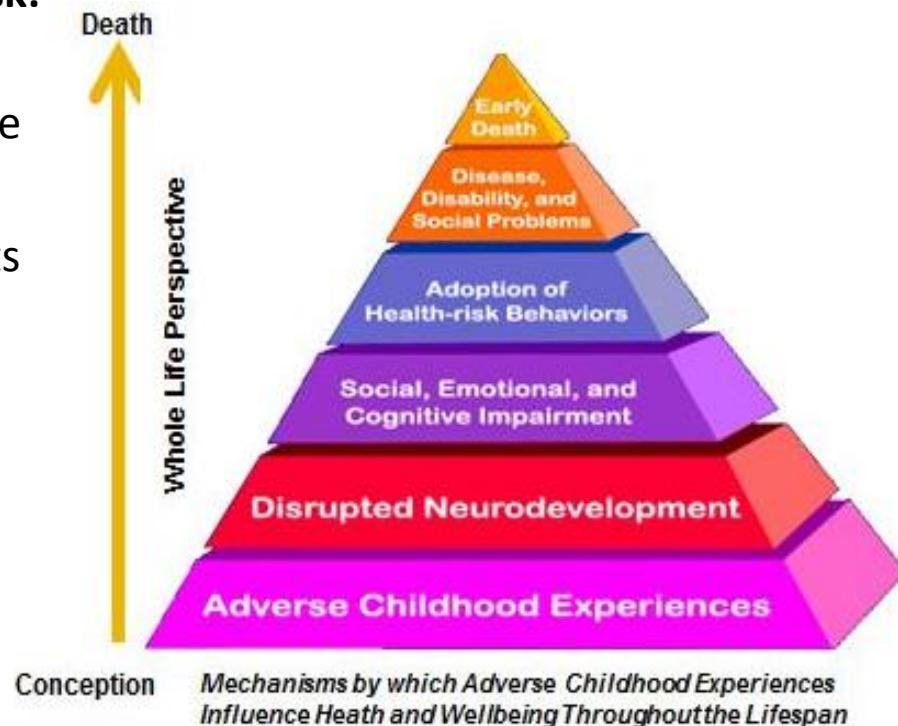


## Early Adverse Experiences:

- Emotional, physical, or sexual abuse
- Emotional or physical neglect
- Household Dysfunctions
  - Mother treated violently
  - Household substance abuse
  - Household mental illness
  - Parental separation or divorce
  - Incarcerated household member

## Increase Adult Risk:

- Alcohol or substance abuse
- Depression/ suicide attempts
- Heart disease
- Unhealthy behaviors
- Early death



Source: CDC Adverse Childhood Experiences Study  
<http://www.cdc.gov/violenceprevention/acestudy/index.html>



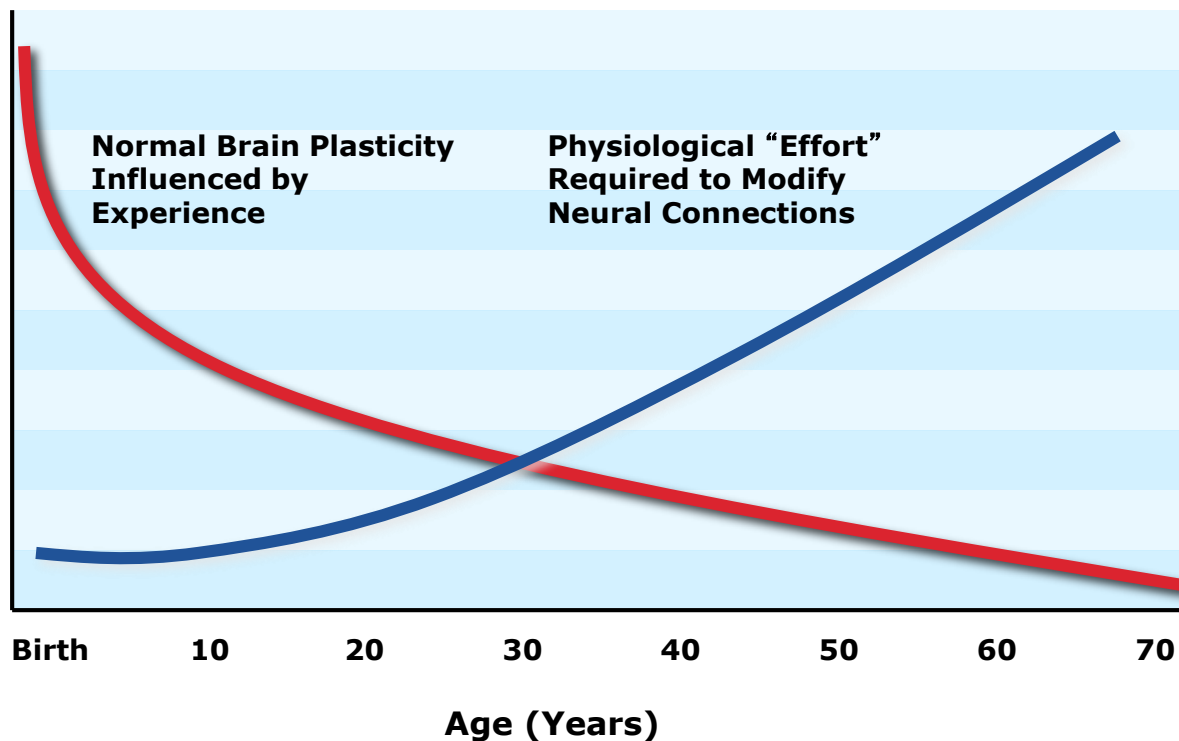


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# The Return on Investment



# Ability To Change Brains Decreases With Time While Costs To Change Behavior Increases



Source: Levitt (2009)



# Early Investments, Greatest Gains

## Benefits of Early Investment

### Reductions in:

- Juvenile and adult crimes
- Cases of abuse and neglect
- Domestic violence
- Welfare dependency
- Special education



### Increases in:

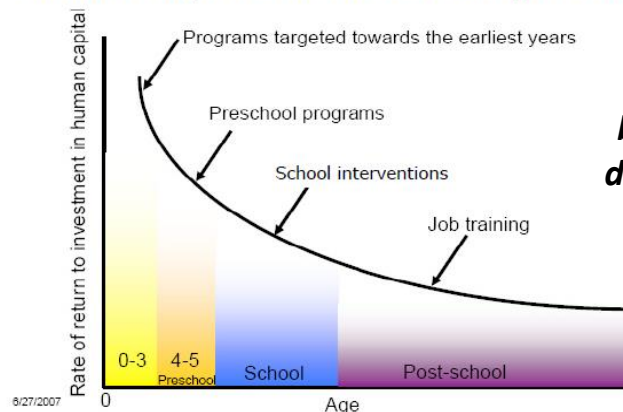
- Children's cognitive and social-emotional development
- Educational performance and graduation rates
- Parental involvement
- Job training and earnings



**The first 1,000 days of life are the beginning of health and education reform**

## ROI of Early Investment

### Rates of Return to Additional Investments in Human Capital for Disadvantaged Children



***Ability to impact brain development decreases with time, while costs to change behavior increase***

Heckman, J. "Investing in Disadvantaged Young Children Is Good Economics and Good Public Policy," Testimony before the Joint Economic Committee, Washington D.C., June 27, 2007





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# An Investment: HealthySteps





# What Parents Know & Want

- That early experiences have lifelong impact
- That they will be a significant influence on their children's development
- To draw a new roadmap: most would use more positive parenting strategies *if they knew them*
  - 8 in 10 believe that parenting can be learned
- **The “missing first year”**
- **An expectation gap**
- **Half aren't getting needed support**
- **89% look to pediatrician for parenting advice**



# Pediatric and Family Practices Reach All Parents and Children...



Almost all families take their babies to see a pediatrician or family practitioner

- Parents *still* highly trust these professionals

Non-stigmatizing

Universal – no eligibility criteria

Perfect opportunity for learning

Powerful point of entry for additional services

# ...But Pediatric Primary Care Across the U.S. Has Room for Improvement



Integrated behavioral, emotional, and physical health care for children is not yet the norm

Families need more mental health support in the pediatric office setting

Social determinants of health are not yet at the forefront of pediatric primary care practice

Time and training for positive parenting and parent-child relationship guidance is lacking

Child screening, referrals and care coordination do not lead to 100% resource access

Too many children with delays are not receiving needed developmental services

# What is HealthySteps?



- Evidence-based, interdisciplinary primary care that **integrates a child development professional**, known as a HealthySteps Steps Specialist (HSS)
- **Transforms how practices serve children and families**, ensuring:
  - **Universal screening for child development and social needs**
  - **Services built on strengths and tailored to needs:** guidance, support, consults, team-based well-child visits, referrals, and care coordination
  - **Effective community partnerships** across agencies
  - **Common and complex concerns get addressed:** feeding, behavior, sleep, attachment, adapting to life with a young child, depression, substance misuse, intimate partner violence, and more
- The results are remarkable
  - ✓ *Positive, nurturing parenting and avoidance of physical discipline*
  - ✓ *Access to info and supports for developmental and social needs*
  - ✓ *Healthier children, happier families*





# The Core Components and Community Resource Connections

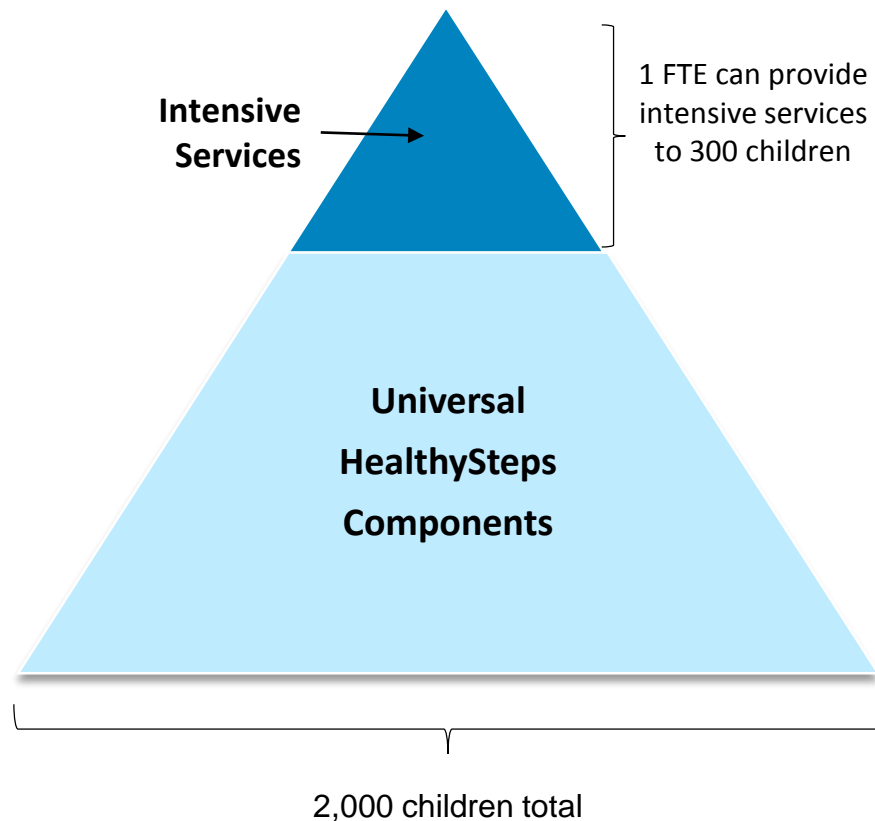
1. Team-based well-child visits
2. Child development, social-emotional, and behavior screening
3. Family protective factor and social determinants of health screening
4. Access to HSS support between visits (office, home, phone, text, email)
5. Connections to community resources
6. Care coordination/systems navigation
7. Positive parenting guidance and information
8. Early learning resources



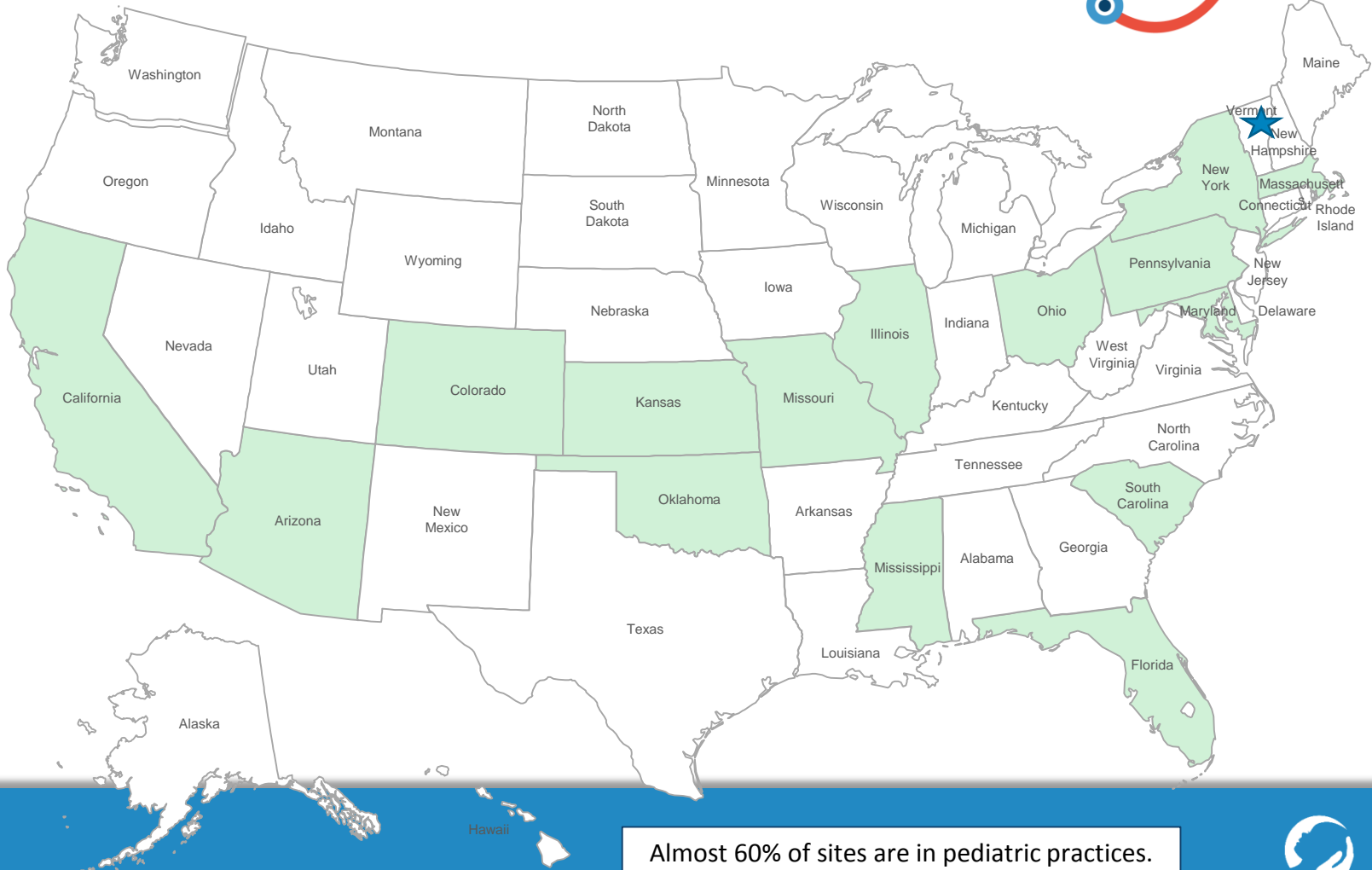
# HealthySteps Reach and Impact



- Employing one FTE HSS enables each practice to reach approximately 2,000 children and their families a year
- All 2,000 children and families receive:
  - Universal developmental and social needs screening
  - Positive parenting guidance and information
  - Early learning resources
  - Family-centered care and partnership at a medical home
  - Short-term consultations as needed
- Intensive, longitudinal services are tailored to children and families' individual needs



# Our Footprint: 30,000 Children Served Per Year



Almost 60% of sites are in pediatric practices.  
Medicaid is the primary insurer for HS children.







HealthySteps

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# Outcomes



# Meeting Healthcare's “Quadruple Aim”

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Diagram c/o HRSA-funded HITEQ Center at [hiteqcenter.org](http://hiteqcenter.org)

# Improved Child Development and Family Connections



<p><b>Child Health &amp; Development</b></p>	<ul style="list-style-type: none"> <li>✓ Children were more likely to receive <b>well-child visits</b> on time <sup>1,2,3,4</sup></li> <li>✓ Children were more likely to receive <b>vaccinations</b> on time <sup>1,3,4</sup>, and 1.4x more likely to be up-to-date on vaccinations by age 2 <sup>1,2</sup></li> <li>✓ <i><b>Continuity of care</b> was better for both total visits and well-child visits <sup>4,5</sup></i></li> <li>✓ Children were 8x more likely to receive a <b>developmental assessment</b> at 30-33 months <sup>1</sup></li> <li>✓ Greater security of <b>attachment</b> and fewer <b>child behavior</b> problems<sup>7</sup></li> </ul>
<p><b>Connections to Resources</b></p>	<ul style="list-style-type: none"> <li>✓ Children were 1.4x more likely to have <b>nonmedical referrals</b>, including for behavior, speech, hearing, child abuse or neglect, and early intervention <sup>1</sup></li> <li>✓ Families were 4x more likely to receive information on <b>community resources</b> <sup>1</sup></li> <li>✓ <i>Parents received <b>more services</b><sup>3,4,8</sup> and had <b>longer clinic visits</b> <sup>4</sup></i></li> </ul>
<p><b>Breastfeeding &amp; Early Nutrition</b></p>	<ul style="list-style-type: none"> <li>✓ Mothers were 22% less likely to give their <b>newborn water</b> and 16% less likely to <b>introduce cereal</b> by 2-4 months of age (too young for solid foods) <sup>1</sup></li> <li>✓ <i>Mothers reported feeling more supported for <b>breastfeeding</b> <sup>9</sup> and breastfed longer than the minimum 6 months recommended by the American Academy of Pediatrics <sup>2</sup></i></li> <li>✓ <i>Children identified as being “at risk” of <b>social-emotional challenges</b> demonstrated lower rates of <b>obesity</b> at age 5 than comparable children who did not receive HealthySteps <sup>10</sup></i></li> </ul>
<p><b>Early Literacy &amp; School Readiness</b></p>	<ul style="list-style-type: none"> <li>✓ Mothers were 22% more likely to show <b>picture books</b> to their infants every day <sup>1</sup></li> <li>✓ <i>Mothers were 12% more likely to have read to their infant in previous week <sup>9</sup></i></li> <li>✓ Beyond 5 years, families were more likely to report that their child had looked at or read books in the previous week <sup>11</sup></li> <li>✓ <i>Parents were more successful in establishing <b>routines</b>, <b>reading</b> to children, and <b>limiting television</b> viewing time <sup>4</sup></i></li> </ul>

**Key:**

- ✓ Non-italicized = data from original RCT (and potentially other studies)
- ✓ *Italicized = data from later studies*



# Improved Parenting, Depression, and Family/Provider Experience



<p><b>Child Safety Practices</b></p>	<ul style="list-style-type: none"> <li>✓ Children were 23% less likely to have <b>emergency room visits</b> for injuries in a 1-year period <sup>1</sup></li> <li>✓ Mothers were 24% less likely to place newborns on their stomachs to sleep, reducing <b>SIDS risk</b><sup>1</sup></li> <li>✓ <i>Parents scored higher on an injury control index, and families were more likely to use <b>stair gates</b> and have access to the local <b>poison control</b> center's telephone number <sup>2, 9</sup></i></li> </ul>
<p><b>Parenting Knowledge &amp; Practices</b></p>	<ul style="list-style-type: none"> <li>✓ Parents were 22% less likely to rely on <b>harsh punishment</b> (yelling, spanking with hand) <sup>1</sup></li> <li>✓ Parents were less likely to use <b>severe discipline</b> (face slap, spanking with objects) <sup>1,2</sup></li> <li>✓ Parents were more likely to notice <b>behavioral cues</b> and provide <b>age-appropriate nurturing</b> <sup>1,4</sup></li> <li>✓ <i>Families received more <b>anticipatory guidance</b> that matched their needs <sup>4, 11</sup></i></li> <li>✓ <i>12 key child development and family-specific topics were discussed more frequently <sup>3</sup></i></li> <li>✓ <i>Parents demonstrated a better <b>understanding of infant development</b> <sup>9</sup></i></li> </ul>
<p><b>Maternal Depression</b></p>	<ul style="list-style-type: none"> <li>✓ Mothers with depressive symptoms were more likely to discuss their symptoms <sup>1,2, 4</sup></li> <li>✓ Mothers were 1.4x more likely to have a <b>maternal nonmedical referral</b>, including for maternal depression <sup>1</sup></li> <li>✓ <i>Providers were more likely to discuss <b>postpartum depression</b> with mothers <sup>3</sup></i></li> <li>✓ <i>Mothers with depressive symptoms reported <b>fewer symptoms</b> after 3 months in the program <sup>9</sup></i></li> </ul>
<p><b>Parent &amp; Physician Satisfaction</b></p>	<ul style="list-style-type: none"> <li>✓ Parents were 2x more likely to report that <b>someone at the practice went out of the way</b> for them, and they were 1.5x more likely to rely on someone in the practice for advice (rather than friend or relative) <sup>1</sup></li> <li>✓ <i>Parents were 1.8x more likely to <b>remain with the practice</b> through 20 months <sup>11</sup></i></li> <li>✓ <i>Parents rated their <b>provider as more competent and caring</b> <sup>4</sup> and were more likely to <b>believe that the health plan cared about them</b> as a parent<sup>9</sup></i></li> <li>✓ <i><b>Physicians were highly satisfied</b> with the program and the role of the Healthy Steps Specialist with parents <sup>4</sup></i></li> </ul>

**Key:**

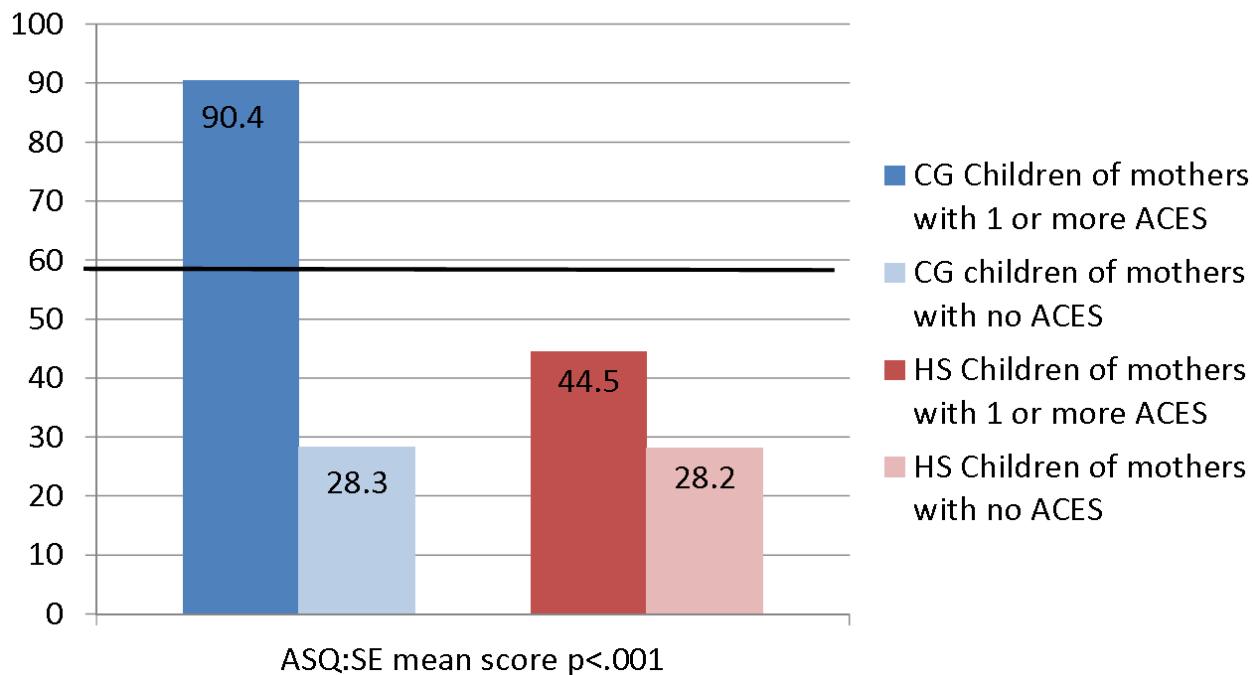
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# Moderating the Impact of Maternal Trauma on Child Social-Emotional Development <sup>6</sup>



## Results – Impact of Intervention on 36 month ASQ:SE scores



# Impact on Childhood Obesity <sup>10</sup>



- **Emerging research suggests that HealthySteps may protect children “at risk” of social-emotional challenges from becoming obese**
  - Children “at risk” for social-emotional challenges (positive ASQ-SE) were more likely to be obese at age 5, and their mothers were less likely to do two recommended feeding practices (restriction and limit setting) and more likely to pressure their child to eat
  - Children “at risk” for social-emotional challenges who received HealthySteps had similar weight status at age 5 as children “not at risk”
- *Early child social-emotional problems, unmitigated by intervention, are related to several unhealthy parental feeding styles and eventually to childhood obesity*
- *HealthySteps may play a protective role in preventing childhood obesity in children at risk of social-emotional challenges*





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# Costs and Financing

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# How Much Does HealthySteps Cost?



- Each HSS can offer intensive services to up to 300 children for as low as \$450 per child per year, which is **significantly lower cost than other models**
- **HealthySteps costs vary by state and site, and costs per child** are driven by:
  - HSS salary and fringe benefits (which depend on credentials)
  - Overall caseload and intensive services caseload
  - Practice-specific model enhancements (e.g., home visiting)
  - Materials/supplies
- **Training costs are low** and include differentiated National Office support:
  - Approximately \$12,500 (plus trainer expenses) for on-site, two-day training for all practice staff - opportunities for multiple practices to attend joint training
  - Follow-up technical assistance calls during first 6 months of implementation
  - Support from broad array of National Office subject matter experts





# Funding and Reimbursement



- HealthySteps has value for patients, trainees, and practices
- Many HealthySteps services are eligible for reimbursement from Medicaid, CHIP, and other payers
- Dedicated National Office Policy and Finance Team provides technical assistance to sites
  - Create state Medicaid Billing and Coding Toolkits
  - Provide site education on billing opportunities and data collection
  - Develop HealthySteps business cases to illustrate program impact
  - Customize short-term annualized cost saving estimates for state Medicaid agencies and other payers
  - Broker conversations with Medicaid, health plans, and other payers to explore unique payment opportunities



# Interventions Driving Short-Term Medicaid Cost Savings



## Child-Focused Interventions

- Well-child visit and immunization rates
- Oral health
- Inappropriate use of care for ambulatory sensitive conditions

## Adult-Focused Interventions

- Breastfeeding
- Postpartum maternal depression
- Postpartum maternal substance abuse
- Intimate partner violence
- Unhealthy birth spacing

A recent single-state analysis conducted by the HealthySteps National Office demonstrated annualized savings to Medicaid of up to \$1,150 per family, for an *annual* return on investment of **83%**.

\*Analysis did not include savings attributable to postpartum maternal substance abuse interventions.



# HealthySteps Will Drive Longer-Term Cost Savings



- A focus on early childhood health and well-being achieves a wide array of longer-term cost saving impacts:
  - **Physical and behavioral health:** Direct relationship between the number of adverse childhood events (ACEs) and likelihood of having heart disease, cancer, and other chronic conditions
  - **School Readiness and Educational Attainment:** Strongly linked to healthy social and emotional development, and for children who experience ACEs, school readiness and educational attainment are often negatively impacted
  - **Juvenile Justice Involvement:** ACEs contribute to juvenile delinquency, increasing children's risk of juvenile arrests and felony charges
  - **State Spending:** Failing to address infant and childhood mental health disorders in early childhood increases the need for intervention across multiple state programs over the life of a child and into adulthood





**Thank you!  
Questions?**

## Contact Us

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HealthySteps.org

# Citations



- <sup>1</sup> Guyer, B., Barth, M., Bishai, D., Caughy, M., Clark, B., Burkom, D., Genevro, J., Grason, H., Hou, W., Huang, K., Hughart, N., Jones, A.S., McLearn, K.T., Miller, T., Minkovitz, C., Scharfstein, D., Stacy, H., Strobino, D., Szanton, E., & Tang, C. (2003). *Healthy Steps: The first three years: The Healthy Steps for Young Children Program National Evaluation*. Johns Hopkins Bloomberg School of Public Health, February 28, 2003. Retrieved from [http://www.jhsph.edu/research/centers-and-institutes/womens-and-childrens-health-policy-center/projects/Healthy\\_Steps/frnatlevel.html](http://www.jhsph.edu/research/centers-and-institutes/womens-and-childrens-health-policy-center/projects/Healthy_Steps/frnatlevel.html).
- <sup>2</sup> Johnston, B. D., Huebner, C. E., Anderson, M. L., Tyll, L. T., & Thompson, R. S. (2006). Healthy Steps in an integrated delivery system. *Archives of Pediatrics & Adolescent Medicine*, 160(8), 793-800.
- <sup>3</sup> Buchholz, M., & Talmi, A. (2012). What we talked about at the pediatrician's office: Exploring differences between Healthy Steps and traditional pediatric primary care visits. *Infant Mental Health Journal*, 33(4), 430-436.
- <sup>4</sup> Piotrowski, C.C., Talavera, G.A., & Mayer, J.A. (2009). Healthy Steps: A systematic review of a preventive practice-based model of pediatric care. *Journal of Developmental and Behavioral Pediatrics*, 30(1), 91-103.
- <sup>5</sup> Niederman, L.G., Schwartz, A., Connell, K.J., & Silverman, K. (2007). Healthy Steps for Young Children Program in pediatric residency training: Impact on primary care outcomes. *Pediatrics*, 120(3), e596-e603.
- <sup>6</sup> Briggs, R.D., Silver, E.J., Krug, L.M., Mason, Z.S., Schrag, R.D.A., Chinitz, S., & Racine, A.D. (2014). Healthy Steps as a moderator: The impact of maternal trauma on child social-emotional development. *Clinical Practice in Pediatric Psychology* 2(2), 166-175.
- <sup>7</sup> Caughy, M. O., Huang, K., Miller, T., & Genevro, J. L. (2004). [The effects of the Healthy Steps for Young Children program: Results from observations of parenting and child development](#). *Early Childhood Research Quarterly*, 19(4), 611-630.
- <sup>8</sup> Supporting the Development of Young Children in American Indian and Alaska Native Communities Who Are Affected by Alcohol and Substance Exposure: US Department of Health & Human Services Policy Statement. Retrieved from: [https://www.acf.hhs.gov/sites/default/files/e.cd/tribal\\_statement\\_a\\_s\\_exposure\\_0.pdf](https://www.acf.hhs.gov/sites/default/files/e.cd/tribal_statement_a_s_exposure_0.pdf).



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<sup>9</sup> Johnston, B. D., Huebner, C. E., Tyll, L.T., Barlow, W. E., & Thompson, R. S. (2004). Expanding developmental and behavioral services for newborns in primary care: Effects on parental well-being, practice and satisfaction. *American Journal of Preventative Medicine*, 26(4th ser.), 356-366.

<sup>10</sup> Gross, Rachel S., et al. "Early child social-emotional problems and child obesity: exploring the protective role of a primary care-based general parenting intervention." *Journal of Developmental & Behavioral Pediatrics* 36.8 (2015): 594-604.

<sup>11</sup> Minkovitz, C. S., Strobino, D., Mistry, K. B., Scharfstein, D. O., Grason, H., Hou, W., Ialongo, N., & Guyer, B. (2007). Healthy Steps for Young Children: Sustained results at 5.5 years. *Pediatrics*, 120(3), e658-e668.

<sup>12</sup> ZERO TO THREE, Bezos Family Foundation. (2016). *Tuning In: Parents of Young Children Speak Up About What They Think, Know and Need, National Parent Survey*, Washington, DC. ZERO TO THREE

<sup>13</sup> First Things First White Mountain Apache Regional Needs and Assets Report 2014. Retrieved from: <https://www.firstthingsfirst.org/regions/Publications/Regional%20Needs%20and%20Assets%20Report%20-%202014%20-%20White%20Mountain%20Apache%20Tribe.pdf>.

<sup>14</sup> Statistical Profile 2016- White Mountain Apache Tribe Primary Care Area (PCA), Bureau of Women and Children's Health, AZDHS.GOV. Retrieved from: <http://www.azdhs.gov/documents/prevention/health-systems-development/data-reports>.

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