

## UAB GRAND CHALLENGE CONCEPT PAPER

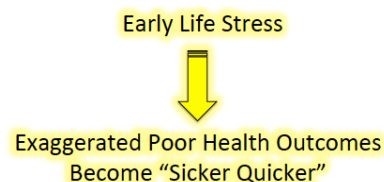
**NAME OF GRAND CHALLENGE** Quality Of Life Throughout The Lifespan (QLTL)

### PRINCIPAL POINT OF CONTACT

Jennifer Pollock, PhD, Professor, CardioRenal Physiology & Medicine, Nephrology, Kaul 802  
jenniferpollock@uabmc.edu; Office 205-975-7525; Cell 706-495-4685

### DESCRIPTION OF THE PROBLEM IN THE QLTL GRAND CHALLENGE

Adversity early in life (or early life stress, ELS) has consistently been linked to poor health outcomes across the lifespan with a 20 year loss in life expectancy.<sup>1,2</sup> Moreover, when individuals with a history of ELS get sick, their health declines more rapidly compared to those without a history of ELS – they become “sicker quicker”. A preponderance of data demonstrates that ELS is associated with a significantly greater risk of diabetes, obesity, hypertension, heart disease, cancer, autoimmune diseases, depression, anxiety, as well as other acute and chronic diseases in childhood as well as adulthood.<sup>1,2</sup> It is clear that ELS has been underestimated as a modulating factor in the disease process leading to exaggerated poor health outcomes and a greater healthcare burden on society.<sup>1-3</sup> **ELS decreases the quality of life leading to increases in the health care burden throughout the lifespan.** Although the definitions of ELS vary across studies, it typically involves adverse experiences between the ages of 0 to 18, such as physical or sexual abuse, parental neglect, emotional abuse, parental substance abuse or severe mental illness, exposure to violence at home, at school or in the community, and natural disasters or wars.<sup>1</sup> ELS is pervasive in our society – in the city of Birmingham, the State of Alabama, the United States and across the world.<sup>1-3</sup> ELS exposure of at least one childhood adverse experience is consistently documented in up to 67% of the population in the US.<sup>1-3</sup> **The unifying goal of the QLTL Grand Challenge is to resolve and prevent ELS-induced exaggerated poor health throughout the lifespan, beginning in childhood.**



### DESIRED OUTCOMES OF THE QLTL GRAND CHALLENGE

The UAB QLTL Grand Challenge will mobilize staff, students, faculty, alumni, and the community to address a problem that either directly or indirectly impacts everyone. ELS does not discriminate by social status, income level, or any other demographic characteristic. The collaborative environment at UAB, both within the campus and beyond to the community, makes this Grand Challenge feasible and aligned with UAB strategic goals. The diversity in the UAB faculty, staff, and student body represent a multitude of backgrounds and experiences. UAB is poised to be a leader in improving health by overcoming ELS providing a model that other communities can follow. **An outcome of the QLTL Grand Challenge is to provide infrastructure and training for multi-disciplinary teams to develop strategies to resolve and prevent ELS-induced poor quality of life among children.**

There is compelling evidence that ELS during all phases of development impacts a child’s brain, metabolism, and cardiovascular health.<sup>4-6</sup> Together, the published literature suggests that ELS is incredibly harmful and leads to long-term changes in biological, mental, and social health across the lifespan.<sup>4-6</sup> Despite the pervasive nature of ELS, resiliency (e.g. coping strategies, facilitating trust) counters the ELS-induced adverse effects.<sup>7</sup> Specific factors known to contribute to resilience include the child’s temperament, flexibility, sense of control, coping style, positive spiritual beliefs, and close supportive relationships with parents or other adults.<sup>8</sup>

Although all types of ELS cannot be prevented, it is possible to equip children with the skills to overcome it. Rather than becoming “sicker quicker”, children who learn to be resilient in the face of adversity may become stronger with higher quality of life, even compared to those who have never experienced ELS. Thus, an **outcome of the QLTL Grand Challenge is to resolve and diminish the negative impact of ELS on the health and quality of life of Alabama children.**

### **QLTL GRAND CHALLENGE PLAN TO SOLVE THE PROBLEM**

Individually, a successful quality of life can mean social support and lasting relationships, security of a stable job, long-term health, or raising children to achieve a high quality of life. When children face ELS, a successful quality of life may be beyond their reach, and when the numbers of impacted children is significant, societies suffer. We propose to enact 4 steps:

**Step 1.** Establish multi-disciplinary working groups comprised of non-UAB and UAB team members to lead each phase of this plan. See Potential Team Members in Tables 1 and 2.

**Step 2.** Identify key elements to building resiliency and overcoming ELS. There are many individuals here at UAB who are role models for overcoming ELS. Some are first generation college students, and some never went to college, but work here every day. We will partner with the students, staff, and faculty, alumni who have overcome ELS to develop consistent strategies to improve resilience among children in the Birmingham area. This step involves these actions:

- Review existing quantitative and qualitative research on resilience and related interventions
- Conduct design thinking exercises among staff, students, faculty, at UAB and alumni that are willing to share their experiences with overcoming ELS
- Conduct design thinking exercises among teachers, coaches, parents, and others in the non-UAB community or in the world who were integral to improving the quality of life of persons who have experienced ELS
- Use thematic analyses to identify critical elements to building resiliency
- Document the health status of individuals with ELS in the presence and absence of resilience during childhood and adulthood
- Identify and establish biomarkers of ELS-associated health status in children and adults that may help identify those at risk, and foster prevention and treatment.
- Identify strategies to incorporate measurements of ELS exposure and resiliency into clinical and non-clinical (e.g., schools) practices
- Disseminate findings to Birmingham community groups and the State of Alabama through our partners and collaborators

**Step 3.** Establish a research and development program to build resiliency among children in Birmingham. This phase is to work with key players in the Birmingham area to establish a program to combat the adverse effects of ELS and deliver the program to teach/build resiliency.

**Step 4.** Define metrics for success of the program on both an individual (i.e. quality of life, metabolic health, etc.) and societal (i.e. educational achievement, neighborhood safety, etc.) level. Team members have already begun the groundwork in a variety of assessments for ELS and resiliency to be conducted with children as well as adults.

If selected to go forward, **the QLTL Grand Challenge will establish the research network and knowledge base to build and test a strategy to diminish the health care burden throughout the lifespan, starting with resolving and preventing the impact of adversity in childhood. The Grand Challenge funding will allow team members to design future interventions, new strategies, and to propagate the investment for future years.**

## POTENTIAL TEAM MEMBERS

Table 1 provides names of potential team members that are proposed for collaborations outside of UAB.

<b>Table 1. Non-UAB affiliated Potential Team Members</b>		
<b>Name</b>	<b>Affiliation or type of organization</b>	<b>Type of collaboration</b>
Jarralynne Agee	Mayor's Office, City of Birmingham	Coordinate activities with the city
Melody Agnew	Executive Director Norwood Resource Center	Networking, community outreach
Robert Anda	Centers for Disease Control	Networking partner interested in childhood adversity and health status throughout the US and world
Danny Carr Michele Yarbrough April Smith	Jefferson County District Attorney Office	Community outreach
Lisa Herring	Birmingham City Schools	Provide insights to resilience and implementation of programs in schools
Connie Hill	Girls, Inc Boys and Girls Club	Provide insights to building resilience in boys and girls
Rebecca Jackson	Community Engagement Director VOICES	Organization advocating and developing policy for children in AL
Nurse Family Partnership Birmingham Chapter Healthy Families America Huntsville site	National chapters of NFP National HFA sites	Home visitation programs target early life experience and provide services for at-risk mothers and infants
Kadie Peters	Birmingham United Way; Community Impact	Resource to Birmingham area non-profit groups
CheRai Robinson Melissa Niven	Helping Families Initiative	Community outreach
Matthew Smith	Alaquest Collaborative for Education	Develop and implement resilience building programs in schools
Sonja Smith	Birmingham School Board Representative	Community outreach
DePriest Waddy	Jefferson County Committee for Economic Opportunity	Provide insights with child development services
Members at large, volunteers from the community	Adults living in the greater Birmingham-metro area	Provide insight into building trust, outcomes of interest, community outreach

Table 2 provides names of members at UAB with their affiliations as well as whether they have published and/or received funding on the topic of early life stress. In response to the Grand Challenge request, we organized a working lunch Retreat in February. The goal of the retreat was to gauge the enthusiasm to go forward in working together for the Grand Challenge as well as to spark future meaningful and impactful collaborations on the topic of childhood adversity and poor health outcomes. We established an email list of attendees as well as other interested potential team members and conducted 2 additional meeting dates in March and April. We found that there were many shared concepts across all the participants of the Retreat and organizational meetings, which formed the basis of this concept letter. Those names with an asterisk attended the Retreat and/or other organizational meetings. We plan to cast a broader net to engage with the entire UAB community if the QLTL Grand Challenge is selected for further opportunities.

<b>Name</b>	<b>Rank/Status</b>	<b>Department Division</b>	<b>School/College</b>	<b>Pubs On Topic</b>	<b>Funding On Topic</b>
Shauntice Allen*	Asst. Professor	Enviro Health Sciences	Public Health	Yes	Yes
Stella Aslibekyan*	Assoc. Professor	Epidemiology	Public Health	Yes	Yes
Monica Baskin	Professor	Preventive Medicine	Medicine		Yes
Elizabeth Cason Benton	Assoc. Professor	Pediatrics	Medicine		
David Calhoun	Professor	Cardio/Vasc Disease	Medicine		
Makenzie Callahan	PhD student	Nutrition Sciences	Health Professions		
Paula Chandler-Laney*	Asst. Professor	Nutrition Sciences	Health Professions	Yes	Yes
Ninad Chaudary	PhD Student	Epidemiology	Public Health		
Victor Darley-Usmar	Professor	Pathology	Medicine		
Tanja Dudenbostel*	Asst. Professor	Cardio/Vasc Disease	Medicine		
Nefertiti Durant	Assoc. Professor	Pediatrics	Medicine	Yes	
Gareth Dutton*	Assoc. Professor	Preventive Medicine	Medicine		
Yogesh Dwivedi*	Professor	Psychiatry & Behavioral Neurobiology	Medicine	Yes	Yes
Dan Feig*	Professor	Pediatrics Nephrology	Medicine		Yes
Aaron Fobian*	Asst. Professor	Psychiatry & Behavioral	Medicine	Yes	Yes

		Neurobiology			
Tim Garvey	Professor /Chair	Nutrition Sciences	Health Professions		
Merida Grant	Asst. Professor	Psychiatry & Behavioral Neurobiology	Medicine	Yes	Pending
Kirk Habegger	Asst Professor	Endocrinology	Medicine		Yes
Bertha Hidalgo	Asst Professor	Epidemiology	Public Health		Yes
Virginia Howard*	Professor	Epidemiology	Public Health	Yes	Yes
M. Ryan Irvin*	Assoc. Professor	Epidemiology	Public Health	Yes	Yes
Keri Kemp	Postdoctoral Fellow	Pathology	Medicine		Yes
Dione King*	Asst. Professor	Social Work	Arts/Sciences	Yes	
Candace Knight	Asst. Professor	Comm Health System	Nursing		
Yooyong Lee	Assoc Professor	Social Work	Arts/Sciences		
C. Elizabeth Lewis*	Professor/Chair	Epidemiology	Public Health		
Li Li*	Asst. Professor	Psychiatry & Behavioral Neurobiology	Medicine	Yes	Yes
Robin Lorenz*	Professor	Pathology	Medicine		Yes
Samantha Martin	Postdoc Fellow	Nutrition Sciences	Health Professions		Yes
Craig Maynard*	Asst. Professor	Pathology	Medicine		Yes
Sara Mazzoni*	Assoc. Professor	OB/GYN	Medicine	Yes	Yes
Kasi McPherson	Postdoctoral Fellow	Medicine Nephrology	Medicine		Yes
Max Michael	Professor	HealthCare & Organization	Public Health		
Bre Minifield	PhD Student	Graduate Biomedical Sciences	Public Health		
Sylvie Mrug*	Professor/Chair	Psychology	Arts/Sciences	Yes	Yes
Paul Muntner	Professor/Vice Chair	Epidemiology	Public Health		
Ijeoma Obi	PhD student	Medicine Nephrology	Medicine	Yes	Yes
Suzanne Oparil*	Professor	Cardio/Vasc Disease	Medicine		

Catheryn Oriehula	PhD student	Lifespan Developmental Psychology	Arts/Sciences		
Rakesh Patel	Professor	Pathology	Medicine		
David Pollock*	Professor	Medicine Nephrology	Medicine	Yes	Yes
Jennifer Pollock*	Professor	Medicine Nephrology	Medicine	Yes	Yes
Marti Rice*	Professor	Nursing Family	Nursing	Yes	Pending
Christina Rodriguez	Assoc. Professor	Psychology	Arts/Sciences		
Sarah Salvy*	Assoc. Professor	Preventive Medicine	Medicine	Yes	Yes
Mike Seifert*	Asst. Professor	Nephrology	Medicine		Yes
Richard Shelton	Professor	Psychiatry & Behavioral Neurobiology	Medicine	Yes	
James Shikany*	Professor	Preventive Medicine	Medicine		
S. Justin Thomas*	Asst. Professor	Psychiatry & Behavioral Neurobiology	Medicine		
Anne Turner- Henson	Professor	Nursing	Nursing		
Molly Wasko	Professor, Chair, Assoc Dean	Management Information Systems	Business		
Susan Walley	Resident	Pediatrics	Medicine		

## REFERENCES

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2. <https://www.youtube.com/watch?v=95ovIJ3dsNk> This youtube by Nadine Burke Harris, MD at Mayo Clinic is a TEDx talk that explains childhood adversity in a very succinct and concise way.
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8. Rutter, M. (1985). Resilience in the Face of Adversity: Protective Factors and Resistance to Psychiatric Disorder. *British Journal of Psychiatry*, 147(6), 598-611. doi:10.1192/bjp.147.6.598