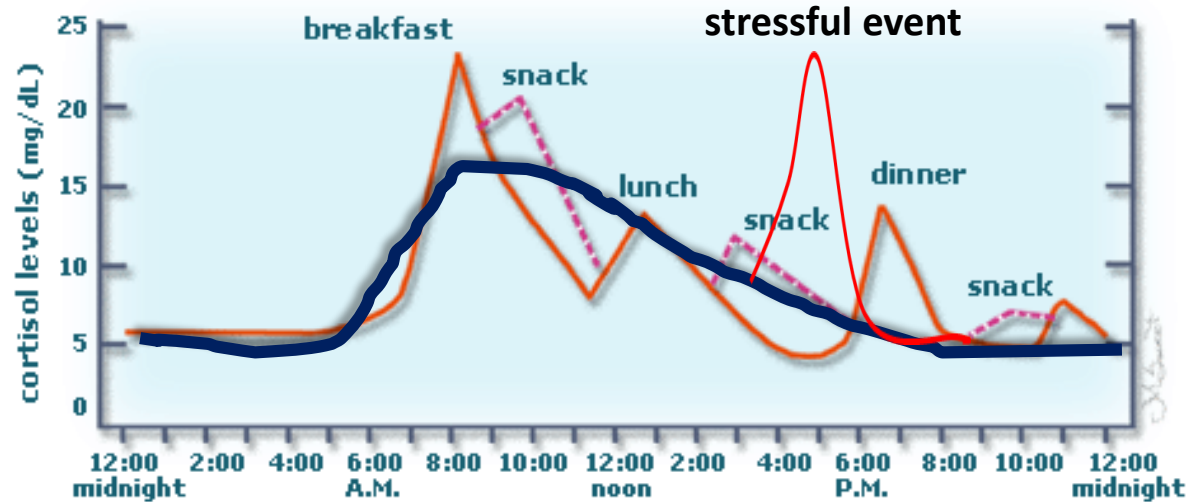


How Stress is Passed From One Generation To The Next

Kent L. Thornburg, PhD
Professor of Medicine
Knight Cardiovascular Institute
Moore Institute for Nutrition & Wellness
Oregon Health & Science University

Normal Daily Stress Hormone (cortisol) Levels in Adults

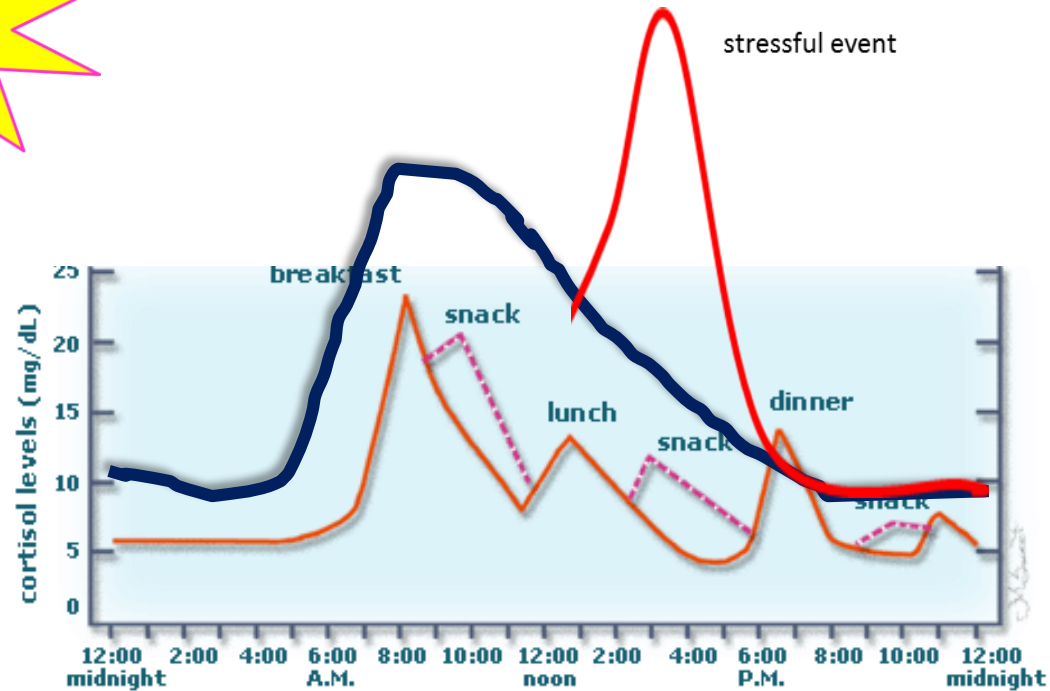
Circadian rhythm and your cortisol cycle



Adapted from:
Wilson, J. 2001. *Adrenal Fatigue: The 21st Century Stress Syndrome*, 266. Petaluma, CA: Smart Publications.

**Chronic
Social
Stress**

Toxic Stress



Continuous Social Stress Leads to High Blood Pressure, Shorter Life, Dementia

Job Loss, Housing Stress, Financial Stress, Partner Fights, etc....

Pregnant Woman Being Evicted



Jahnice Marshall with Raymond and Shannan (Pic credit: Myron Jobson)

PUBLISHED: 17:05 07 November 2013 Brent & Kilburn Times, London

Three Forms of Toxic Stress During Pregnancy

- **Partner Abuse**
- **Food Insecurity**
- **Housing Stress**

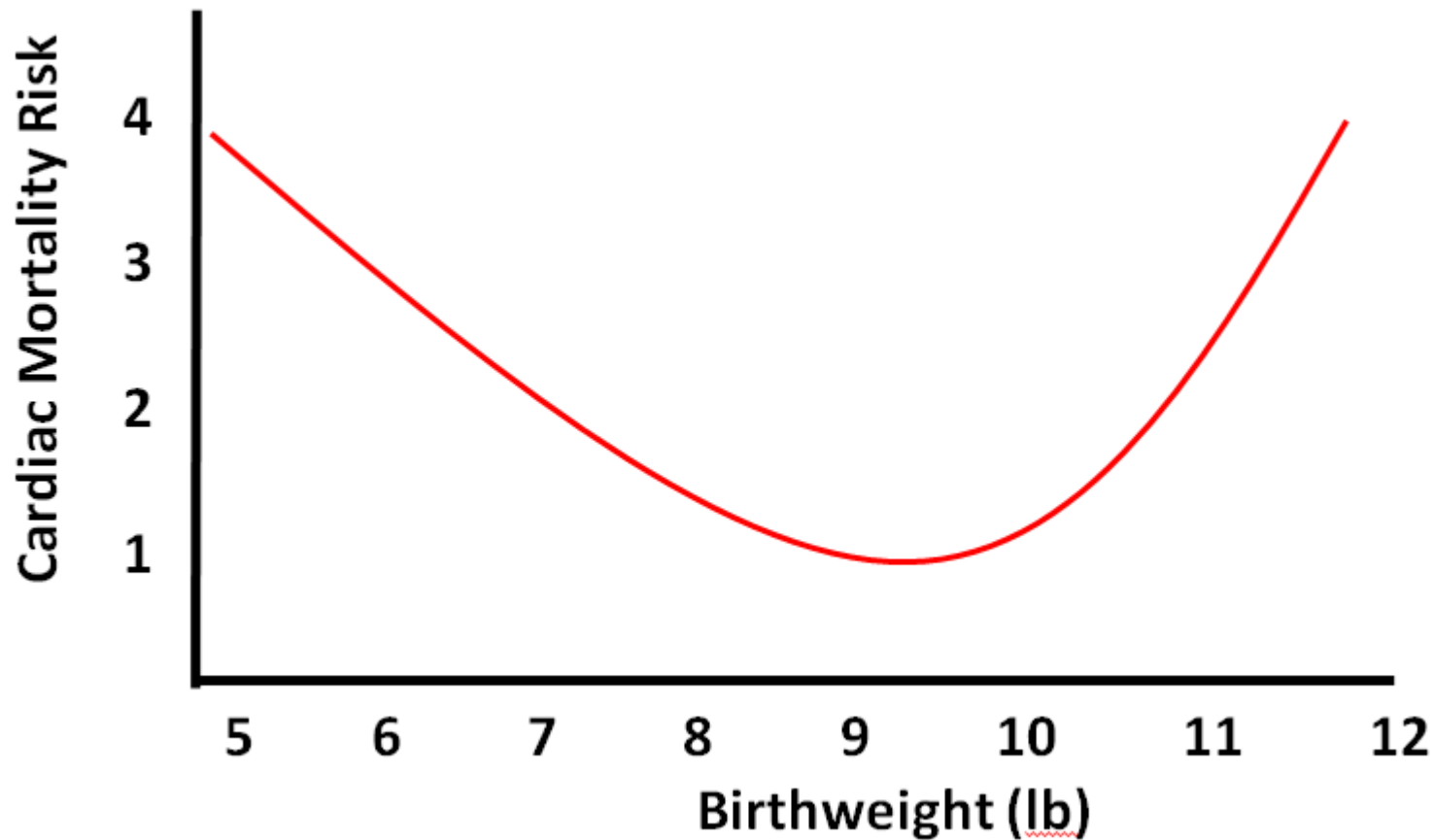


Fetal Growth Restriction
Preterm Birth
Poor Cognitive Development

Heart Disease
in Mother and Offspring

In the beginning...if there was low birthweight...

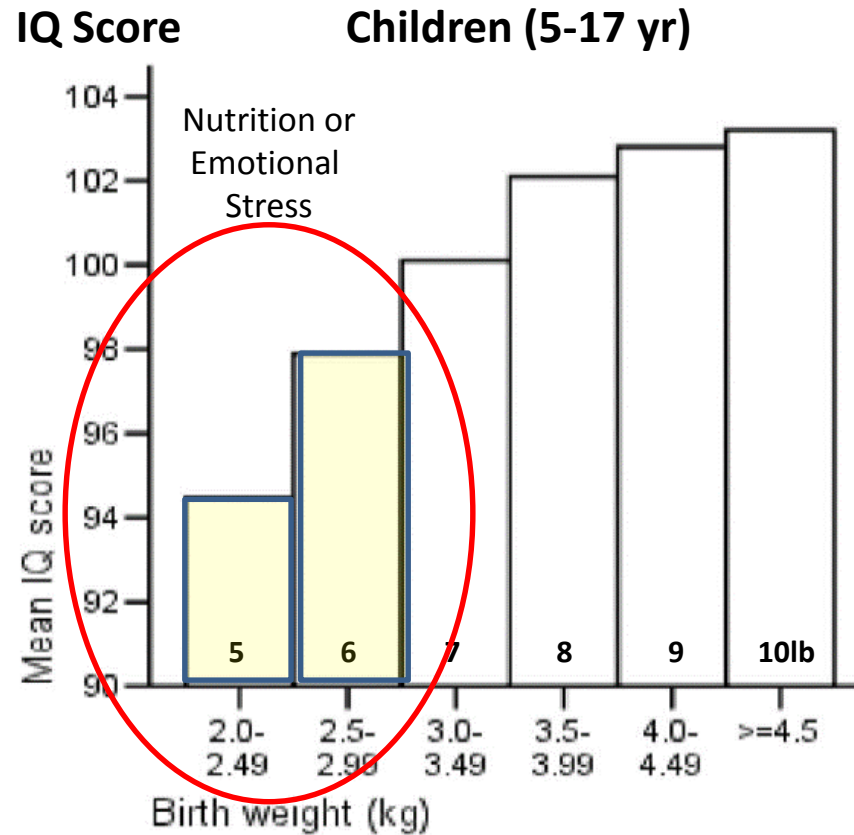
Early Life “Programming” of Heart Disease



Birthweight Also Predicts:

- ✓ Type 2 Diabetes
- ✓ Obesity
- ✓ Hypertension
- ✓ COPD
- ✓ Breast Cancer
- ✓ Cognitive Function

Cognitive Function is Reduced in Low Birthweight Children

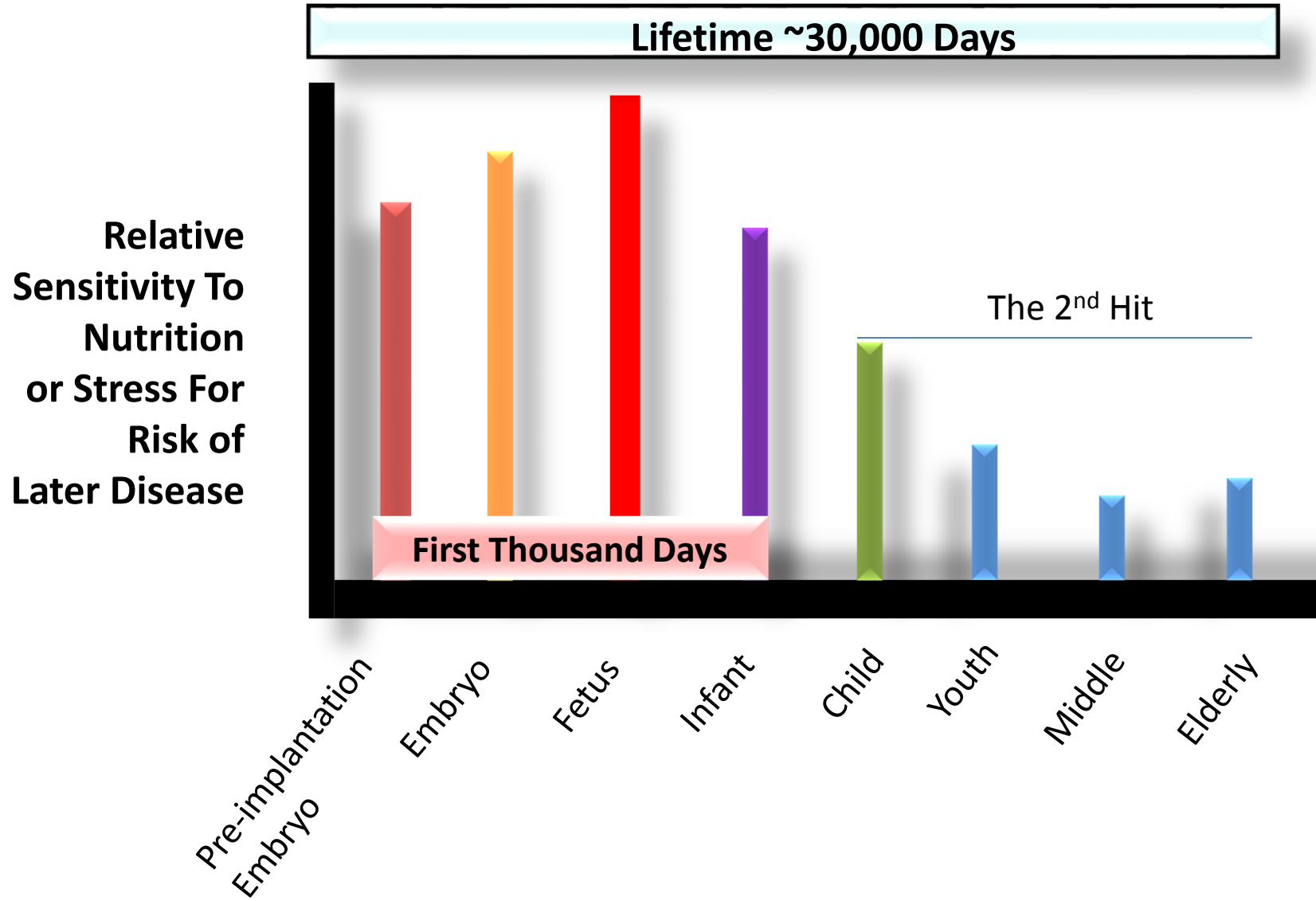


Susan D. Shenkin, John M. Starr, and Ian J. Deary

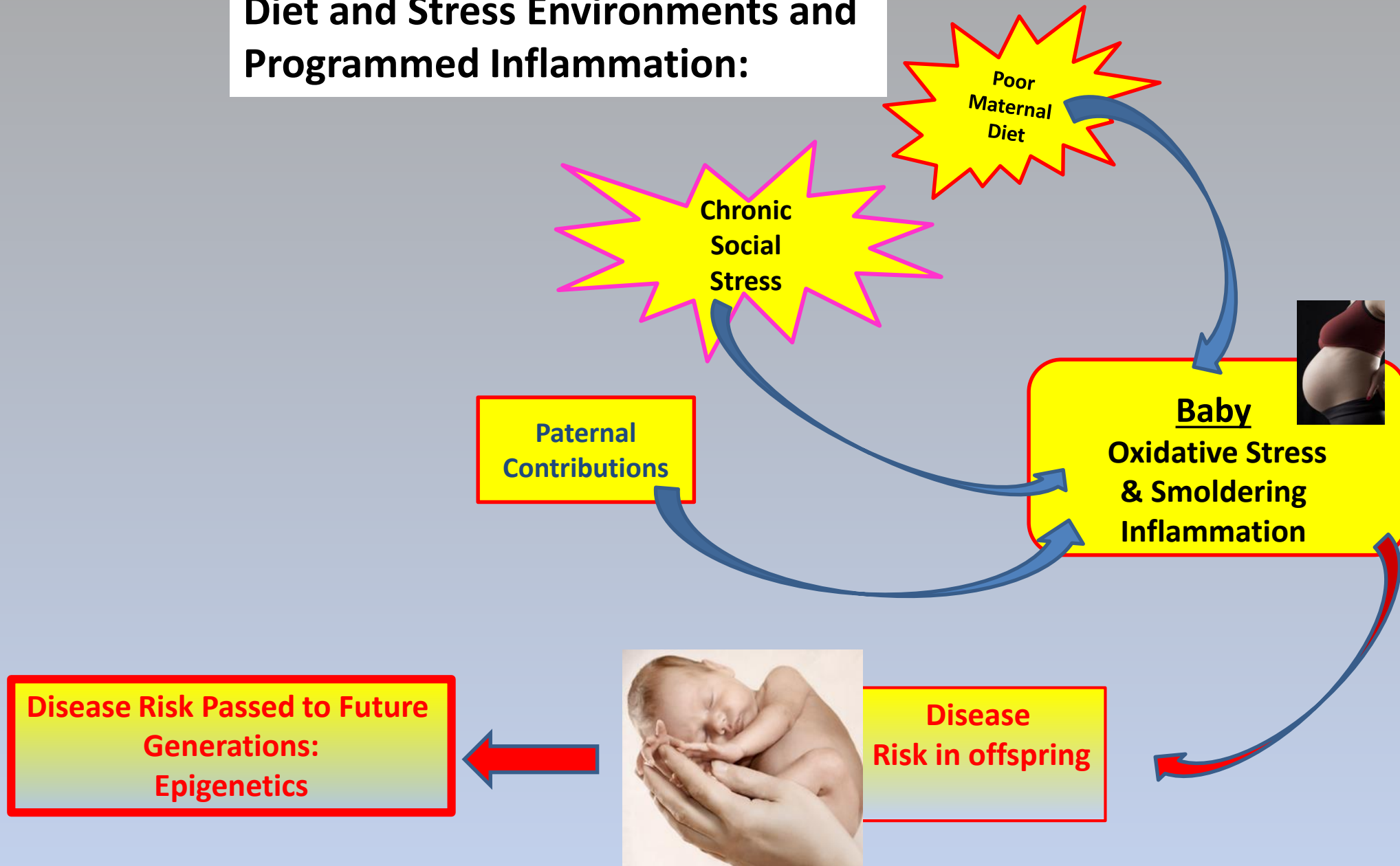
Psychological Bulletin 2004; 130(6):989-1013.

Birth Weight and Cognitive Ability in Childhood: A Systematic Review.

Hypothetical Life Course Sensitivities to Stresses



Diet and Stress Environments and Programmed Inflammation:



Children Who Suffer Housing Stress Have More Physical Ailments and Poorer Mental Health

Table 1 Housing stress factors, categories, and examples

Housing factors	Categories	Examples	Health outcome examined
Physical housing conditions (material)	Substandard conditions	Mould or dampness, infestations Exposed wiring, cracks floors	Respiratory effects, mental health scores (GHQ30) Children's Behavior Inventory (CBI)
	Housing quality	Rooms per person	Demoralisation index (Psychiatric Epidemiology Research Institute)
	Housing hardships Housing characteristic	Noise No heat once in past 3 months Flat versus house	Perceived Stress Index, cortisol measures Poorer health and respiratory status (SF-36) Poorer mental, respiratory health (GHQ30)
Emotional housing conditions (meaningful)	Overcrowding	More child/parent conflicts	Poorer mental health scores
	Lack of control	Landlord unavailable	Poor health status (Rand MHI)
	Housing tenure	Rent or own	Poor self-rated health status
	Housing cost	Fear of eviction	Poor mental health scores, health status (Rand MHI)
	Residential instability	Homelessness	Higher distress symptoms

The Community is the Environment of the Mother
But...
Mother's Diets are Influenced by Her Environment

Environment

Nutritional Stress
Social Stress
Chemical Toxins
Micro-organisms

