Psychological & Physical Stressors and Children’s Respiratory Health

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Rapid Growth and Development During Pregnancy & Early Childhood

20 fold increase in FEV\textsubscript{0.5} from birth to 9 years

Forced expired volume in 0.5 second (mL)

Height (cm)

Stocks 2005
Stress

Air Pollution

Home Allergens

Diet

Tobacco Smoke

Atopic Disease
Airway responses
Lung growth
How does toxic stress get ‘into the body’ to impact respiratory health?
The stress reaction is neither good nor bad in itself.

Stress is useful when it protects us in times of danger or helps us to adapt in times of change.

Can be harmful when it overwhelms our ability to cope.

Wright et al, Thorax 1998
Wright et al, Cur Opin in All Clin Immunol 2005
Wright RJ, Biol Psychol 2010
Interactions

Atopic Disease
Airway responses
Lung growth

Physical toxins
- Tobacco smoke
- Ambient AP
- Allergens
- Chemicals

STRESS

Wright et al, Thorax 1998
Wright et al, Cur Opin in All Clin Immunol 2005
Wright RJ, Biol Psychol 2010 [Epub ahead of print]
Independent impact of psychological stressors?
Many sources of stress

- Acute life events:
  - Recent life experiences (job loss, divorce)
  - Remote life experiences (trauma)
- Chronic strains:
  - Persistent life difficulties (financial strain)
  - Role strains
  - Racism / Discrimination (societal)
  - Community-wide strain / Ecologic level strain (e.g., community violence)
Maternal stress experienced across specific NLEs domains

Prenatal Maternal NLEs Domains

* Denotes the p-value of unadjusted χ² test is <0.05
Maternal Stress and Child Repeated Wheeze: Dose-Response

Pre-Postnatal Stress and Asthma by 6 years

OR of Asthma

Prenatal-Postnatal Stress

Low-Low  High-Low  Low-High  High-High
Pre/Postnatal Stress and Lung Function

Prenatal-Postnatal PM2.5 and FEV1

Prenatal-Postnatal PM2.5 and FVC

Prenatal-Postnatal Stress
Early life toxic stress is literally taking our breath away?
Children Reflect What They See – Emotionally and Physiologically
Prenatal Community Violence, TRAP (BC) and Repeated Wheeze

* Adjusted for gender, season of birth, maternal race, education level, atopy, and home cockroach allergen.
Interactions?

Psychological stressors enhance effects of chemical/physical toxins

Allergens and Prenatal NLEs

Air Pollution and Community Violence
As quality of care decreases, young children become highly stress vulnerable.

Sensitive, responsive, supportive care “buffers” or protects young children from experiencing elevated stress hormone levels.
Maternal Intimate Partner Violence and Increased Asthma Incidence in Children

Buffering Effects of Supportive Caregiving

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