Variations in Year of Maternal Age and Maternal Birthweight among Women Who Delivered Infants with Gastroschisis in Washington State, 1987-2006

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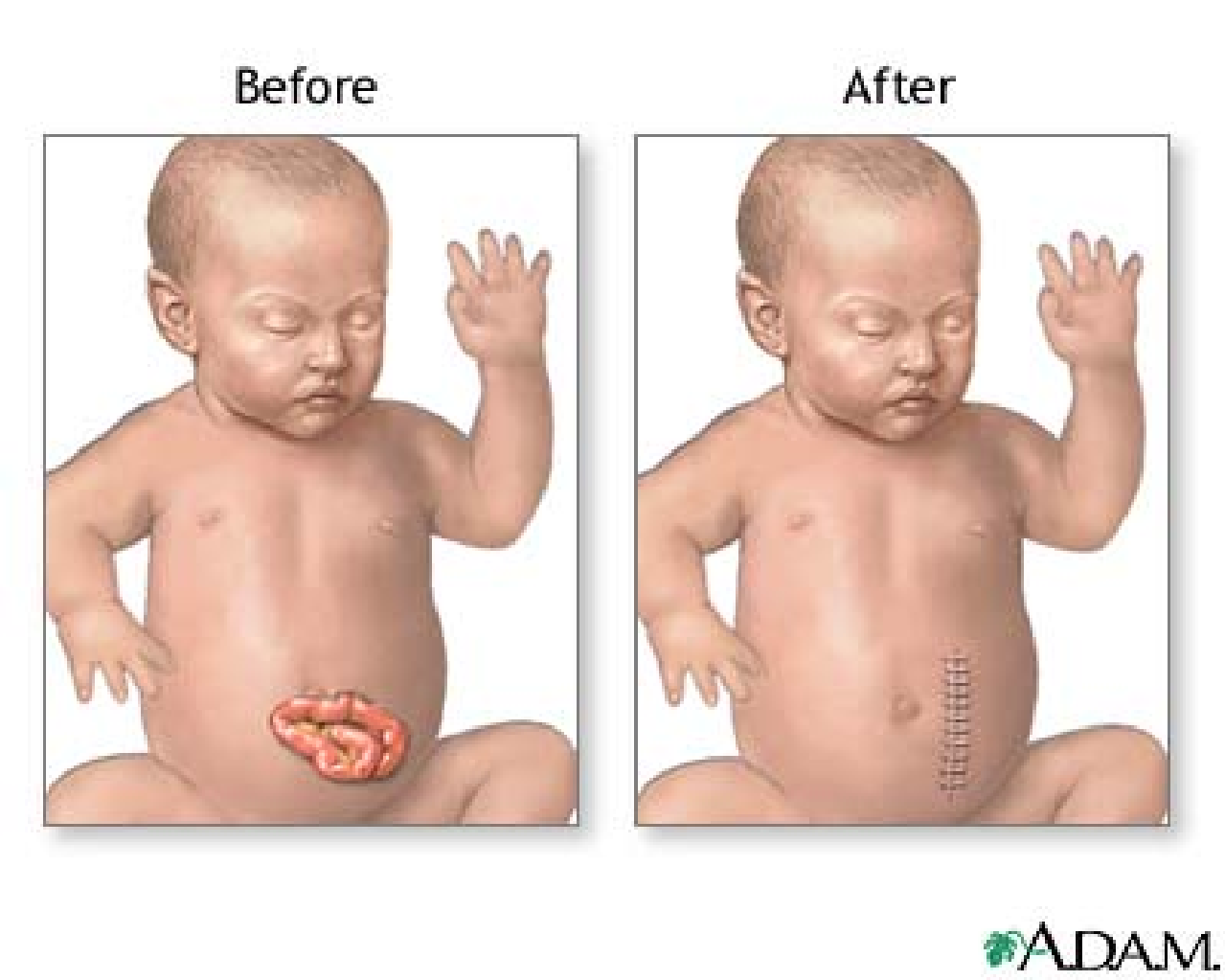
Maternal and Child Health
Research Festival
June 11, 2008

Gastroschisis



http://www.nlm.nih.gov/medlineplus/ency/images/ency/fullsize/7108.jpg

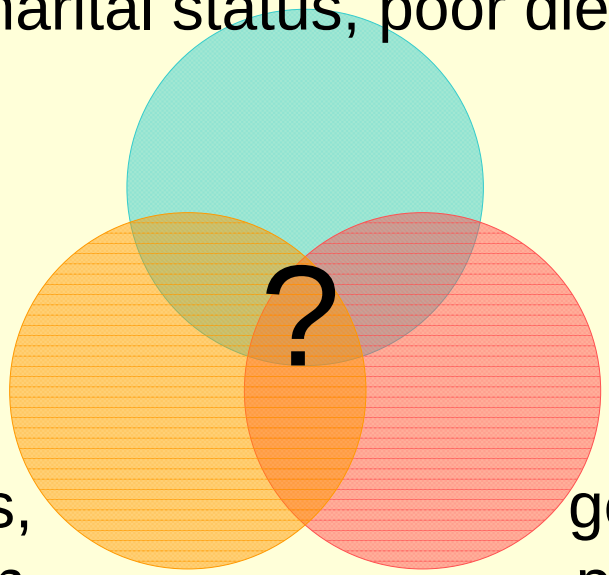
Motivation – Birth Defects

- Inborn syndromes, diseases, disorders, and malformations that occur before birth
- Serious, adverse effect on health, development, or functional ability
- Leading causes of
  - Pediatric hospitalizations
  - Medical expenditures
  - Infant mortality

Empirical Model
Possible Gastroschisis Risk Factors

Maternal

age, first pregnancy, birthweight, smoking, illicit drug use, race, education, marital status, poor diet, BMI, occupation



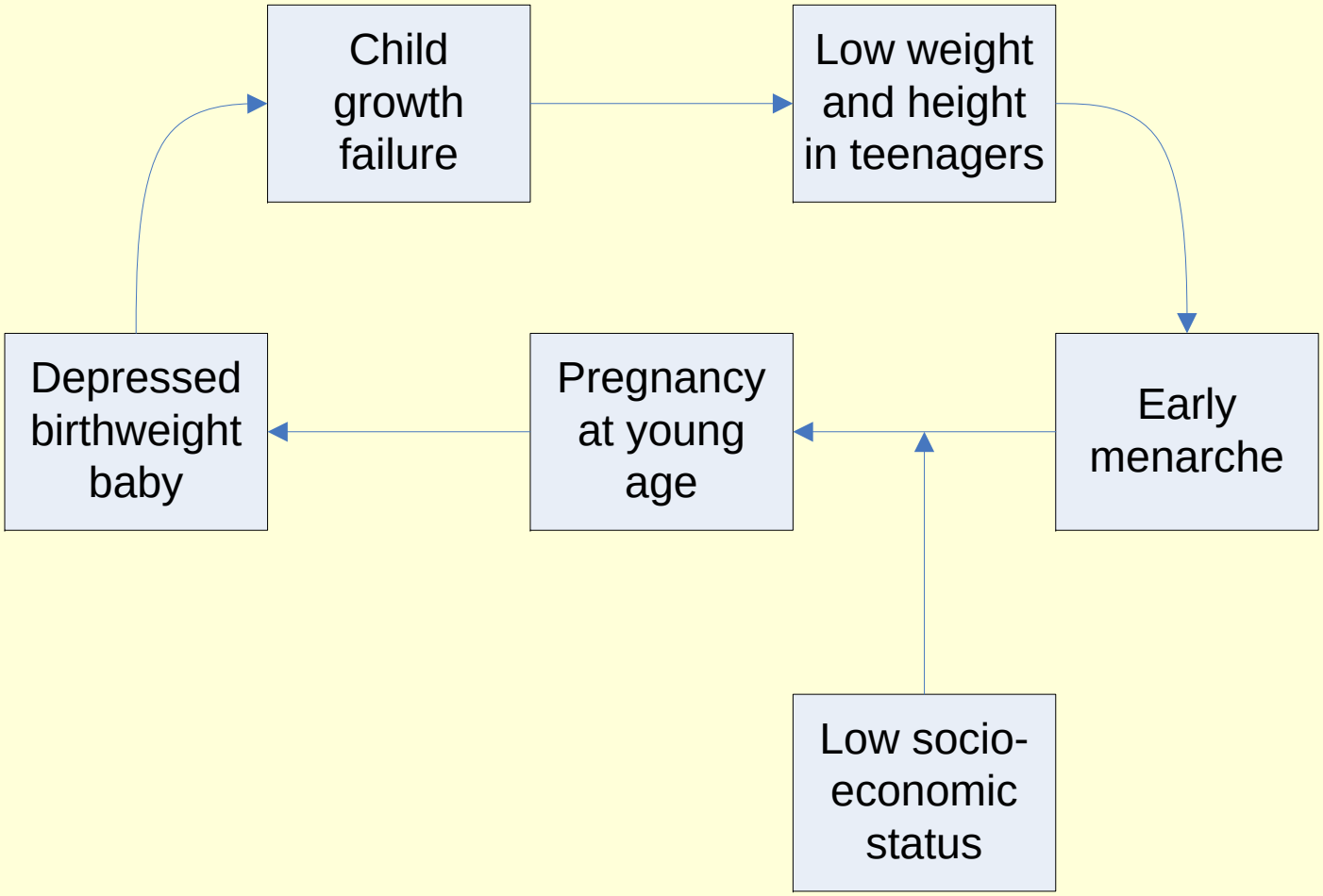
Medications

decongestants, acetaminophen, aspirin, ibuprofen

Environmental

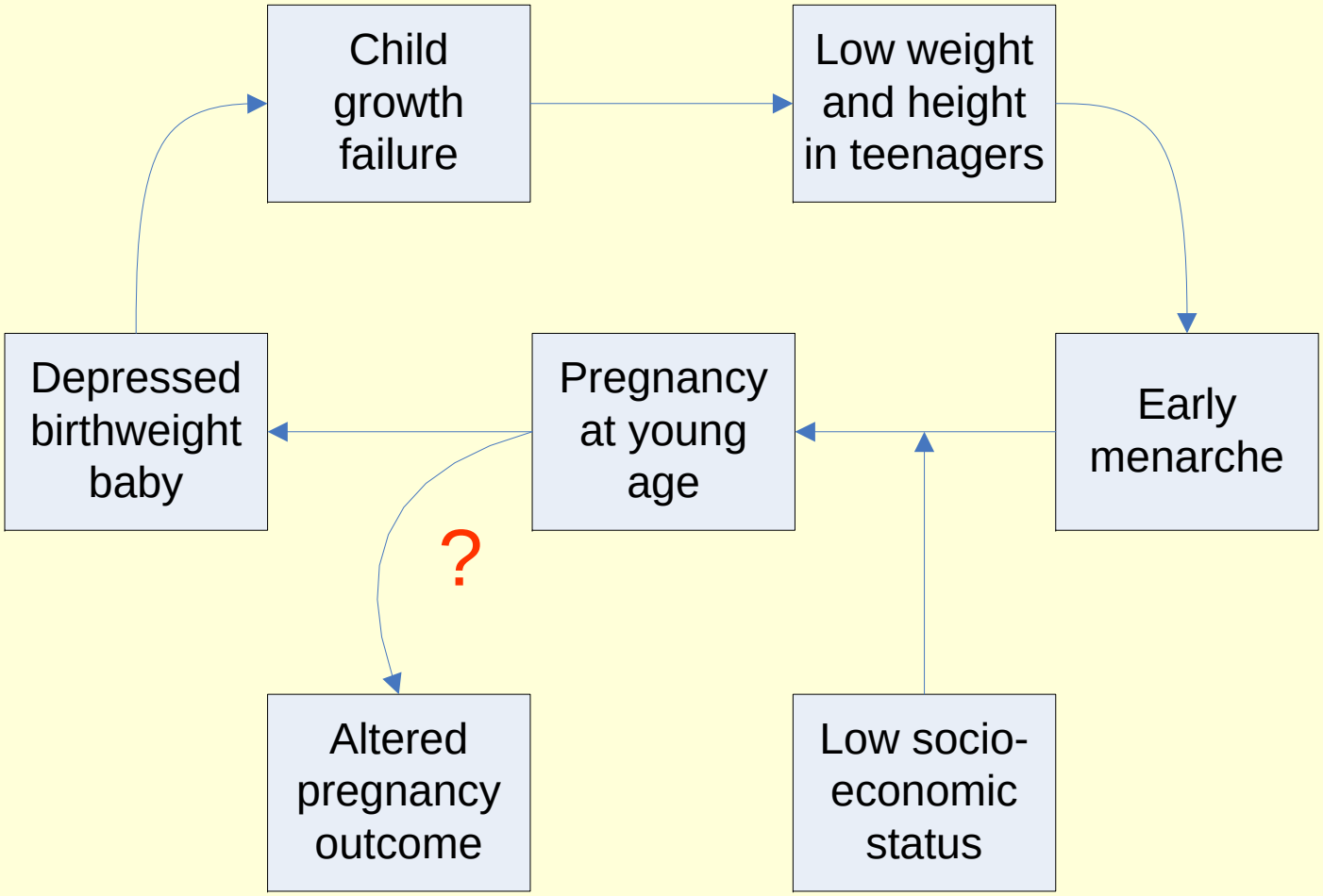
geographic variations, pesticides, fertilizers, solvents

Intergenerational cycle of growth failure



Adapted from ACC/SCN Second Report on the World Nutrition Situation, 1992

Intergenerational cycle of growth failure



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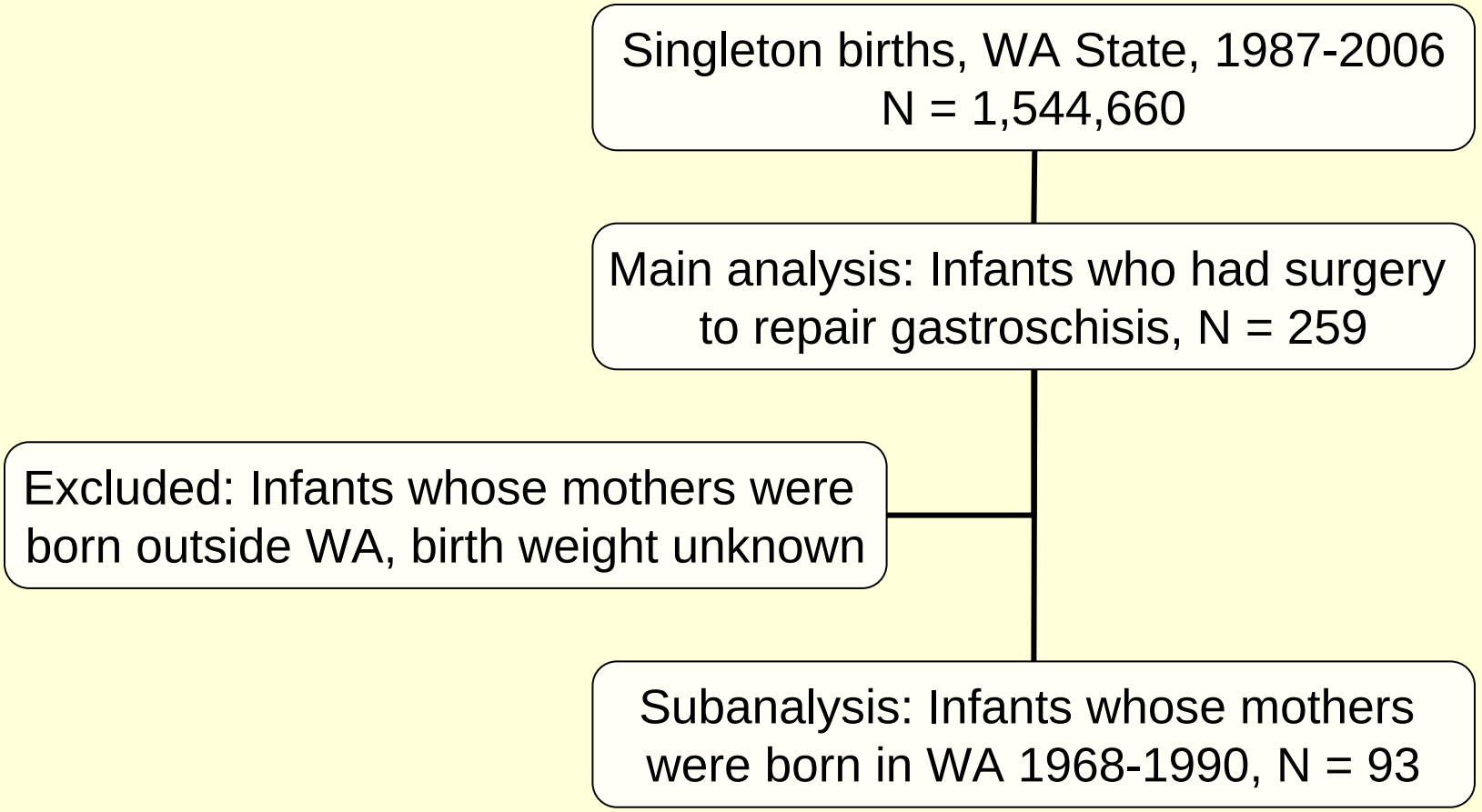
Specific Aims

- Estimate rate of gastroschisis births by year of mothers' age.
  - Describe the relationship between rate of gastroschisis and mothers' year of age.
- Describe birthweights of mothers delivering infants with gastroschisis, stratified by maternal age.

Study Design & Data Source

- Descriptive retrospective review, 1987-2006
- Washington State birth certificate data linked with hospital discharge records
- Main Analysis
  - Explore rate of gastroschisis by year of maternal age at delivery
- Subanalysis
  - Explore differences in maternal birthweight among mothers of infants with gastroschisis

Subject Selection



Statistical Methods

- Descriptive analysis of maternal characteristics
- Calculated rate (per 10,000) by year of maternal age =

$$\frac{\text{\# infants with gastroschisis in WA 1987-2006}}{\text{Total \# singleton live births in WA 1987-2006}} \times 10{,}000$$

- Summary statistics of maternal birthweight
  - Compared maternal birthweight means via one-way analysis of variance
- Stata 10.0 & Microsoft Office Excel 2003 software used

Results – Main Analysis (N=259)

Characteristic	**%**
Race/ethnicity	
White	70.3
Black	1.9
American Indian / Alaska Native	4.6
Asian / Pacific Islander	6.6
Hispanic	16.2

Results – Main Analysis (N=259)

Characteristic	**%**
Appropriate educational attainment for age	64.9
No previous pregnancy	52.1
Married	32.4
Smoked during pregnancy	26.6
Public payment source	67.7

Results – Main Analysis (N=259)

Year of maternal age at delivery of gastroschisis infant modeled as a quadratic term

Results – Subanalysis (N=93)

Maternal age (years)	%	Mean maternal birthweight (g)	SD
13-15	3	3288	158
16-17	18	3354	571
18-19	26	3303	389
20-21	22	3303	528
22-23	15	3515	503
24-25	9	3593	295
26-27	4	3281	227
28-29	0	.	.
30-33	3	3515	986

One-way analysis of variance

Results – Subanalysis (N=93)

Maternal Birthweight (grams)	N	Mean maternal age (years)	SD
<2500	2	18.00	2.83
2500-2999	19	19.84	3.70
3000-3499	39	20.13	3.96
3500-3999	24	20.46	2.69
4000-4499	6	20.50	2.59
4500-4999	3	23.33	6.51

One-way analysis of variance

Limitations

- Potential case under-ascertainment
  - Coding system to classify gastroschisis
- Study design
  - Inference
  - Effects of confounding biases

Conclusions

- Rate of gastroschisis highest among infants of teenagers, specifically women aged 18 years
  - Public health interventions to reduce teen pregnancies should incorporate this message
- Maternal birthweight has little relationship to maternal age at delivery of gastroschisis infant
- Future research directions: epidemiology, clinical management, prevention

Acknowledgments

Thesis Committee

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Supported by Project #T76 MC 00011 from the Maternal and Child Health Bureau (Title V, Social Security Act), Health Resources and Services Administration, U.S. Department of Health and Human Services.