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Juvenile Lives: The Art and Science of Underwriting and Claims

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- Board-certified in Internal Medicine, Pediatrics, and Insurance Medicine
- 10-years experience in primary care clinical practice
- 13-years experience in insurance medicine
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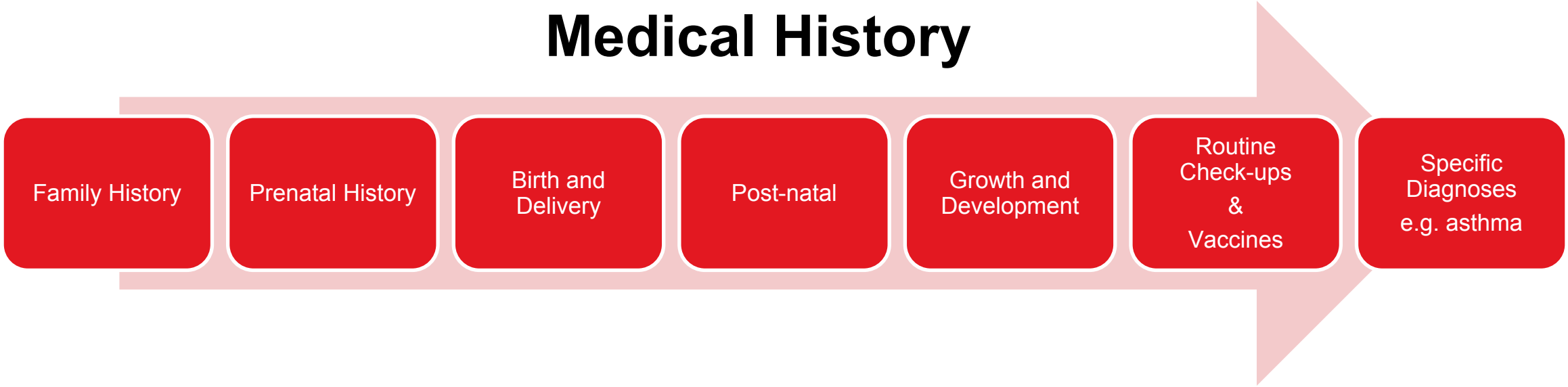
Agenda

- Assessing juvenile risk
- Juvenile mortality and morbidity
- Underwriting and claims case studies
- Product development considerations
- Hot topics

Assessing Juvenile Risk

Medical History



Non-medical

- Insurable interest
- Anti-selection
- Non-disclosure

Assessing juvenile risk is very different than assessing adult risk. Often have limited information given age and sum assured.

Juvenile Definitions

Definitions	
Neonatal period	Birth through first 27 days of life
Post-neonatal period	Age 28 days through end of first year of life
Infant mortality rate (IMR)	Number of infant deaths before age one year per 1,000 live births

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Infant Mortality Rates - Global

1990

65 deaths per 1000

2017

29 deaths per 1000

Annual infant deaths have declined from 8.8 million in 1990 to 4.1 million in 2017.

IMR

Australia = 3.0
China = 9.0
HK = 2.70
Japan = 2.0
Korea = 3.0
Malaysia = 7.0
Taiwan = 4.3
USA = 5.80

World Health Organization and https://data.worldbank.org/indicator/SP.DYN.IMRT.IN

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Neonatal (0-28 days) Mortality Rates

Majority of deaths occur in the first week of life

Preterm birth complications cause 35% of neonatal deaths

Why are these facts useful for underwriting?

World Health Organization

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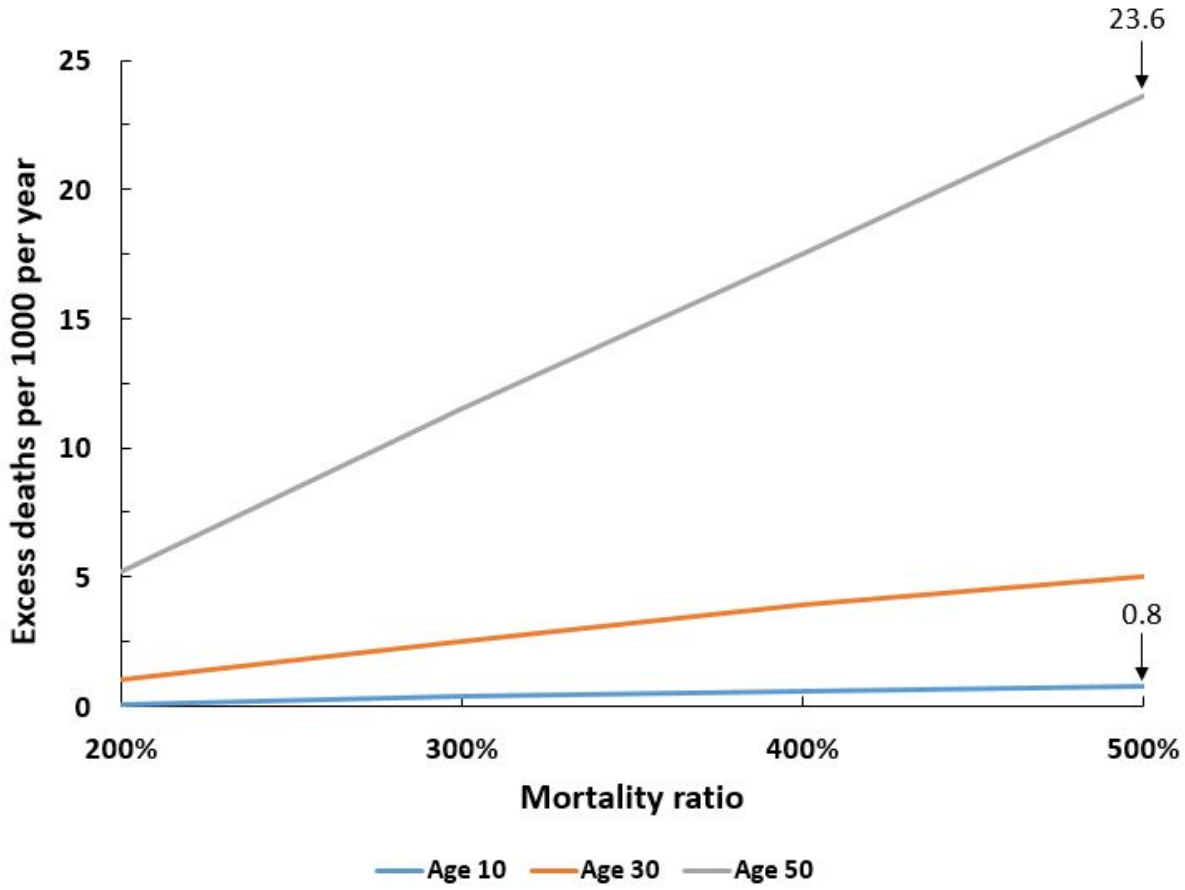
Juvenile Mortality – Actuarial Perspective

- **Mortality Ratio (MR) vs. Excess Death Rate (EDR) by Age**
- **In children, the MR at various ages corresponds to a minimal difference in EDR.**
- **Thus, what is the value of low table rating at young ages?**



Adapted from Brackenridge, 2006, p. 134

Infant Mortality: An Insured Population Perspective

Daniel D. Zimmerman, MD, FAAP; Brad Roudebush, FSA, MAAA

Table 2. Insured Lives Under 1 Year of Age, Summary Data

Number of Policies	197,517
Number of Lives	194,437
Policy Years Exposed	122,287
Average Age at Issue (days)	129
Average Follow-up (days)	230
% 15–90 Days Old at Issue	47%
% Male	51%

Table 3. Deaths Under Age 1 Year, Insured Cohort Data, 1995–2010 (Q3)

Total Number of Deaths	70
Mortality Rate per 1,000	0.57
Mortality Rate, 95% Confidence Interval	[0.45,0.71]
Average Age at Issue (days)	80 (range 15–324)
Average Age at Death (days)	172 (range 27–356)
Average Number of Days from Issue until Death	92 (range 3–319)
Average Face Amount	$68,000

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J Insur Med 2012;43:5–9

Gen Pop

Table 1. Deaths Under Age 1, Cause of Death, General Population, 2007[5]

Cause	Percent	Rate (per 100,000)
Congenital malformations, deformations, and chromosomal abnormalities	19.9	134.0
Disorders related to short gestation and low birth weight	16.7	112.5
Sudden infant death syndrome	8.4	56.8
Maternal complications of pregnancy	6.1	41.0
Accidents (unintentional)	4.4	29.8
Complications of placenta, cord, and membranes	3.9	26.3
Bacterial sepsis of newborn	2.8	19.0
Respiratory distress of newborn	2.7	18.3
Neonatal hemorrhage	2.1	14.5
Diseases of circulatory system	2.0	13.8
All other causes	31.0	209.1
All causes	100.0	675.1

Insured Lives

JOURNAL OF INSURANCE MEDICINE

Table 4. Deaths Under Age 1 Year, Cause of Death, Insured Cohort, 1995–2010 (Q3)

Cause	Number of Cases	Percent of Total
Sudden infant death syndrome	28	40.0
Accidents (unintentional)	12	17.1
Infectious disease	5	7.1
Unknown or undetermined	4	5.7
Oncologic	4	5.7
Cardiovascular	3	4.3
Aspiration/choking	3	4.3
Primary pulmonary hypertension	2	2.9
Trauma (intentional)	2	2.9
All other causes (1 each) – renal failure, liver failure, chromosomal abnormality, hydrocephalus, pyloric stenosis and dehydration, nerve injury, hypoxic/ischemic encephalopathy due to cardiopulmonary arrest	7	10.0
All causes	70	100.0

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J Insur Med 2012;43:5–9

Infant Mortality: Insured Population

Conclusions:

- **Insured lives infant mortality rate is *less than* one-tenth of the general population.**
- **The leading causes of death are different.**
- **The value of a waiting period after birth before life cover can be offered is of great value.**
- **The typical, minimal underwriting requirements are effective to screen for the most concerning risks at this age.**
- **Sudden infant death syndrome (SIDS) remains a significant risk to both the general and insured populations. (Now more broadly referred to as sudden unexplained infant death – SUID.)**

JOURNAL OF INSURANCE MEDICINE

J Insur Med 2012;43:5–9

Case 1

- 4 month old female – Life, CI, ESCI.
- Delivered at home by paramedics. Estimated gestational age (EGA) 37 + 3. Apgar scores were 2 at 1 minute and 6 at 5 minutes. BW = 2.33 kg/5.1 lbs.
- Normal prenatal history, metabolic, and hearing screen. Discharged to home on Day 2 of life.
- Readmitted to hospital Day 4 of life for jaundice. Treated with "bili" lights and discharged.
- Follow up well-child visit at 4 months of age revealed normal growth and development.

What's the risk?

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Apgar Scoring System

Criterion	0 Points	1 Point	2 Points	Points Totaled
Activity (muscle tone)	Absent	Arms and legs flexed	Active movement	
Pulse	Absent	< 100/min	≥ 100/min	
Grimace (reflex irritability)	Flaccid	Some flexion of extremities	Active motion (sneeze, cough, retract)	
Appearance (skin color)	Blue, pale	Body pink, extremities blue	Completely pink	
Respiration	Absent	Slow, irregular	Vigorous cry	

Scores
0-3 – severely depressed
4-6 – moderately depressed
7-10 - normal

- **Apgar score intended to evaluate a newborn's condition *at birth* and guide resuscitation**
- **Only applies to full-term infants**
- **Not intended to be a long-term prognosticator of outcome**
- **1% of infants have Apgar < 7 at 5 minutes in developed countries**

Ehrenstein, V. Clinical Epidemiology 2009;1 45-53.

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Association of Apgar Scores with Death and Neurologic Disability

- **Risk of <u>neonatal</u> mortality based upon Apgar score at 5 minutes**

5 min Apgar	% death by age 28 days
0-3	16.4%
4-6	2.3%
7-10	0.05%

- **Relation b/n Apgar score and infant mortality only slightly higher, indicating most mortality occurs during the neonatal period**

- **Risk of cerebral palsy (RR>20), epilepsy (RR 4-7), and low adult cognition (RR 1.3) associated with 5 min Apgar scores < 7**

Ehrenstein, V. Clinical Epidemiology 2009;1 45-53.

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Association of Apgar Scores with Death and Neurologic Disability

- RRs are high, but absolute risks are low
- Most infants with low Apgar scores grow up without disability and most children with disability do not have a history of low Apgar scores
- Most mortality associated with low Apgar scores occurs in the first month of life

Recommendations
Assess the history for co-morbid conditions which may accompany a low Apgar score, e.g. sepsis, documented hypoxia, length of resuscitation, hospital course, and growth and development.

Underwriting Decision?

Ehrenstein, V. Clinical Epidemiology 2009;1 45-53.

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Jaundice: A concern?

- **Almost all newborns develop a total serum bili > 1 mg/dL**
- **Newborns with bili > 25 mg/dL at risk for developing bilirubin-induced neurologic dysfunction which can lead to kernicterus.**
- **Need to take age into account and plot on a nomogram.**

Physiologic Jaundice
Normal transitional phenomenon
Results in increased unconjugated bili
Bili peaks at 48 – 96 hours
Bili peaks later in premature infants
Should resolve by day 10 in Asian infants

Red Flags
Jaundice in the first 24 hours of life
New-onset jaundice after two weeks of life
Elevated “direct” bili

Phototherapy and exchange transfusions are primary treatments.

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Case 2

- 8 month old male – life cover only.
- Born at 31 weeks EGA, 1500 grams/3.3 lbs, due to placental abruption.
- Developed respiratory distress shortly after birth.
- Received Survanta (surfactant) and nasal CPAP for 72 hours.
- Remained in hospital for 3 weeks.
- No major infections or congenital anomalies.
- Seen at 1, 2, and 6 months in clinic. At 25th percentile for HT, WT, and head circumference.

What's the risk?

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Prematurity – birth occurring at < 37 weeks EGA

Definitions	
Extreme preterm	< 28 weeks
Very preterm	28 to < 32 weeks
Moderate preterm	32 to < 34 weeks
Late preterm	34 – 36 weeks
Full term	=/> 37 weeks

Breakdown of Premature Births	
32 to 36 weeks	84%
28 to < 32 weeks	10%
< 28 weeks	5%

- WHO: 5-18% of infants (15 million) globally are born prematurely
- Mortality and morbidity rates increase with shorter gestational age and lower birth weight

50% of twins and 90% of triplets are born prematurely

Prematurity – Etiology

Premature Delivery - Etiology	
Spontaneous preterm labour	30 – 50%
Preterm premature rupture of membranes (PPROM)	5 – 40%
Multiple gestation	10 – 30 %
Preeclampsia or eclampsia	12%
Antepartum bleeding	6 – 9%
Fetal growth restriction	2 – 4%
Other	8 – 9%

Specific causes leading to preterm labor
Activation of maternal or fetal hypothalamic pituitary adrenal axis
Infection
Decidual hemorrhage
Pathological uterine distention

Fetal Factors:

- Congenital abnormalities
- Growth restriction
- Infections
- Fetal distress

REF: www.uptodate.com

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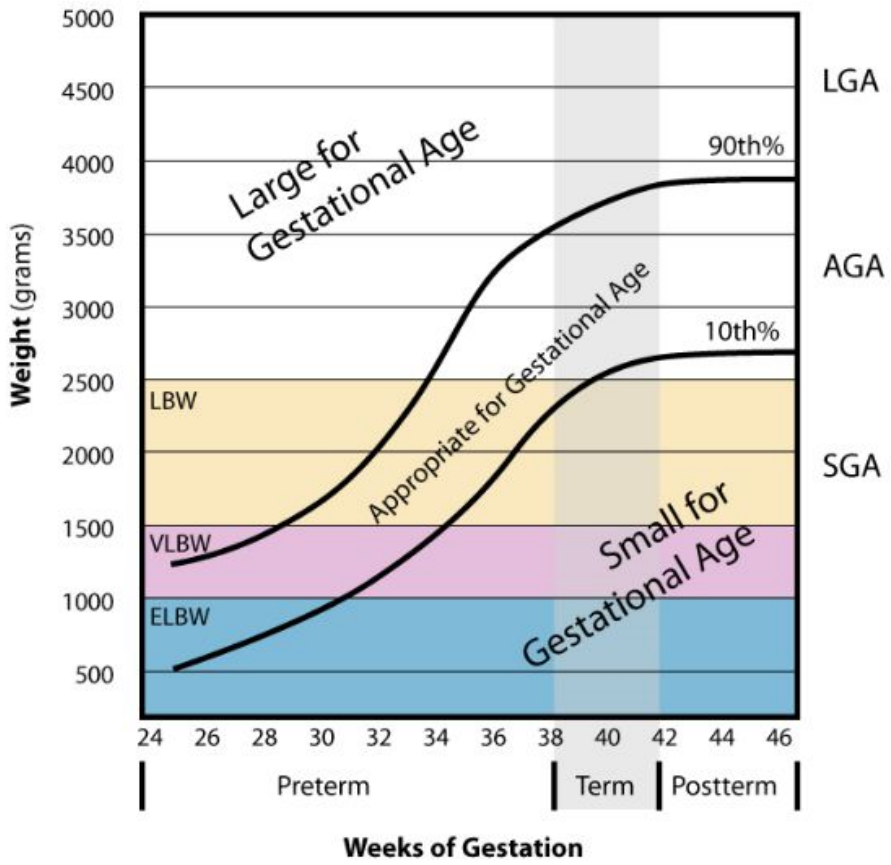
Low Birth Weight (LBW)

Definitions	
Low birth weight (LBW)	< 2,499 grams/5.5 lbs (regardless of gestational age)
Very low birth weight (VLBW)	< 1,500 grams/3.3 lbs
Extremely low birth weight (ELBW)	< 1,000 grams/2.2 lbs
Normal birth weight	2,500 - 4,200 grams/9.2 lbs



- 1 in 7 births are LBW
- 90% of cases in low/middle income countries

Low birth weight can be:
- Preterm birth (low gestational age)
- Small for gestational age (SGA)

SGA caused by:
- Constitutional (no pathology)
- Intrauterine growth restriction (IUGR)

https://commons.wikimedia.org/wiki/File:Weight_vs_gestational_Age.jpg CC Attribution-Share Alike 3.0 Unported

Prematurity - Complications

Short-term
Apnea of prematurity
Respiratory distress syndrome (RDS)
Intraventricular hemorrhage (IVH)
Patent ductus arteriosus (PDA)
Infection
Necrotizing enterocolitis (NEC)

Medium to Long-term
Retinopathy of prematurity (ROP)
Bronchopulmonary dysplasia (BPD)
Cognitive and behavioral difficulties
Disability
Chronic health issues
Under-vaccination
Cerebral palsy

The rates of many of these complications have decreased in recent years.

- Increased use of antenatal steroids
- Increased use of surfactant
- Improved ventilation techniques
- Evidence-based practice guidelines

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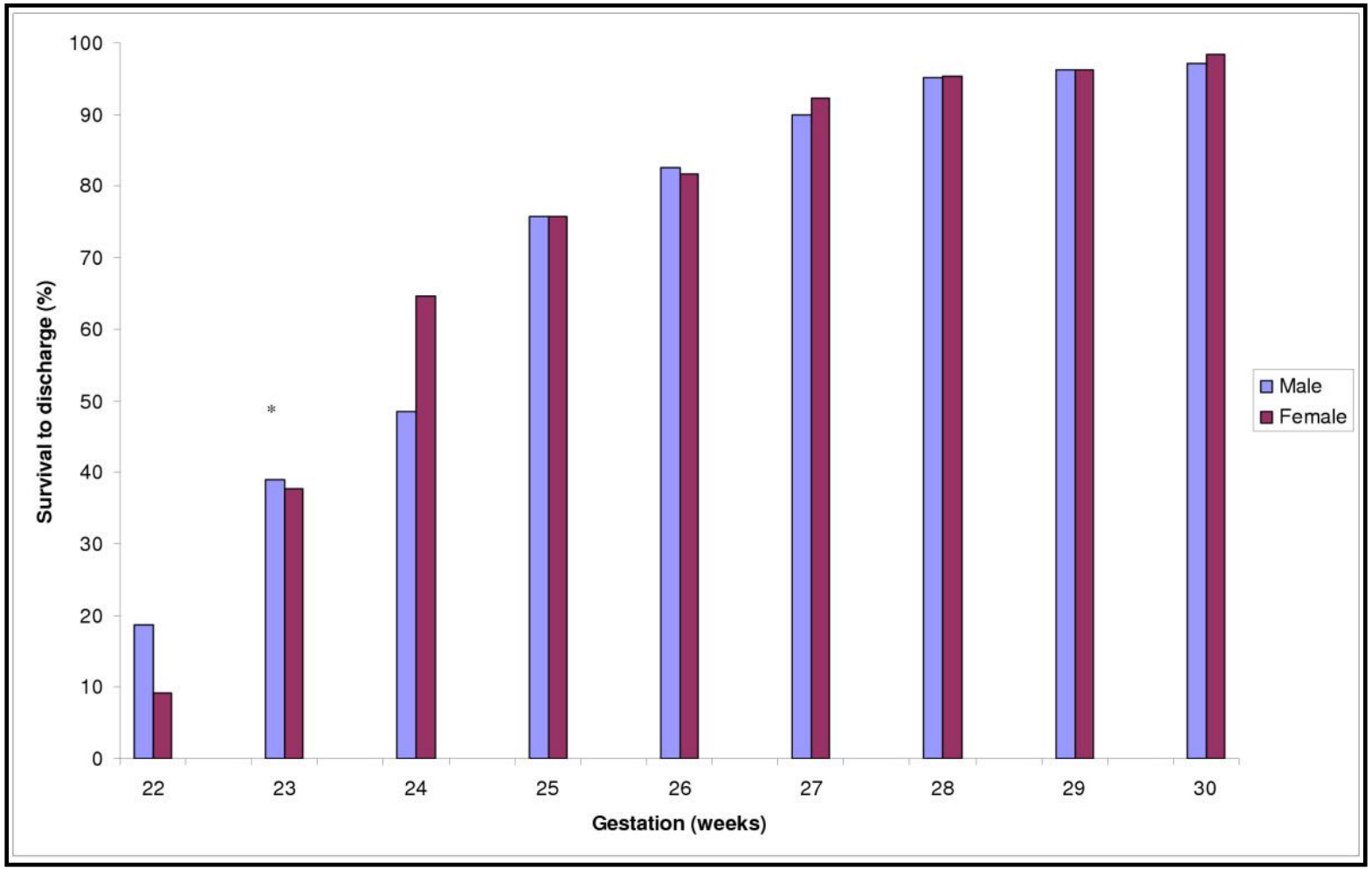
Survival to Discharge by Gestational Age



- **Large Canadian study**
- **Congenital anomalies excluded**
- **Survival to discharge only**

Jones, H, et al. BMC Pediatrics 2005, 5:40

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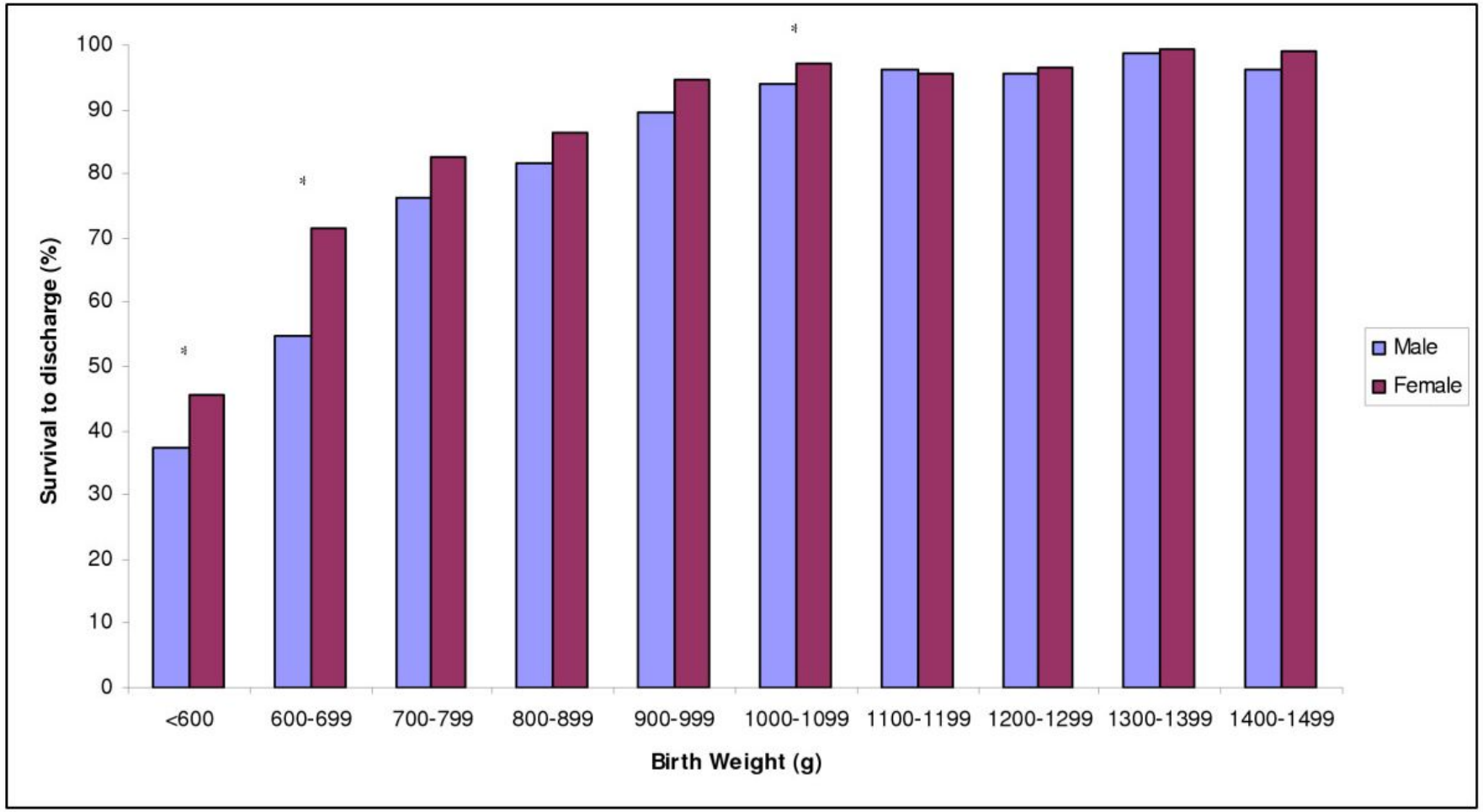
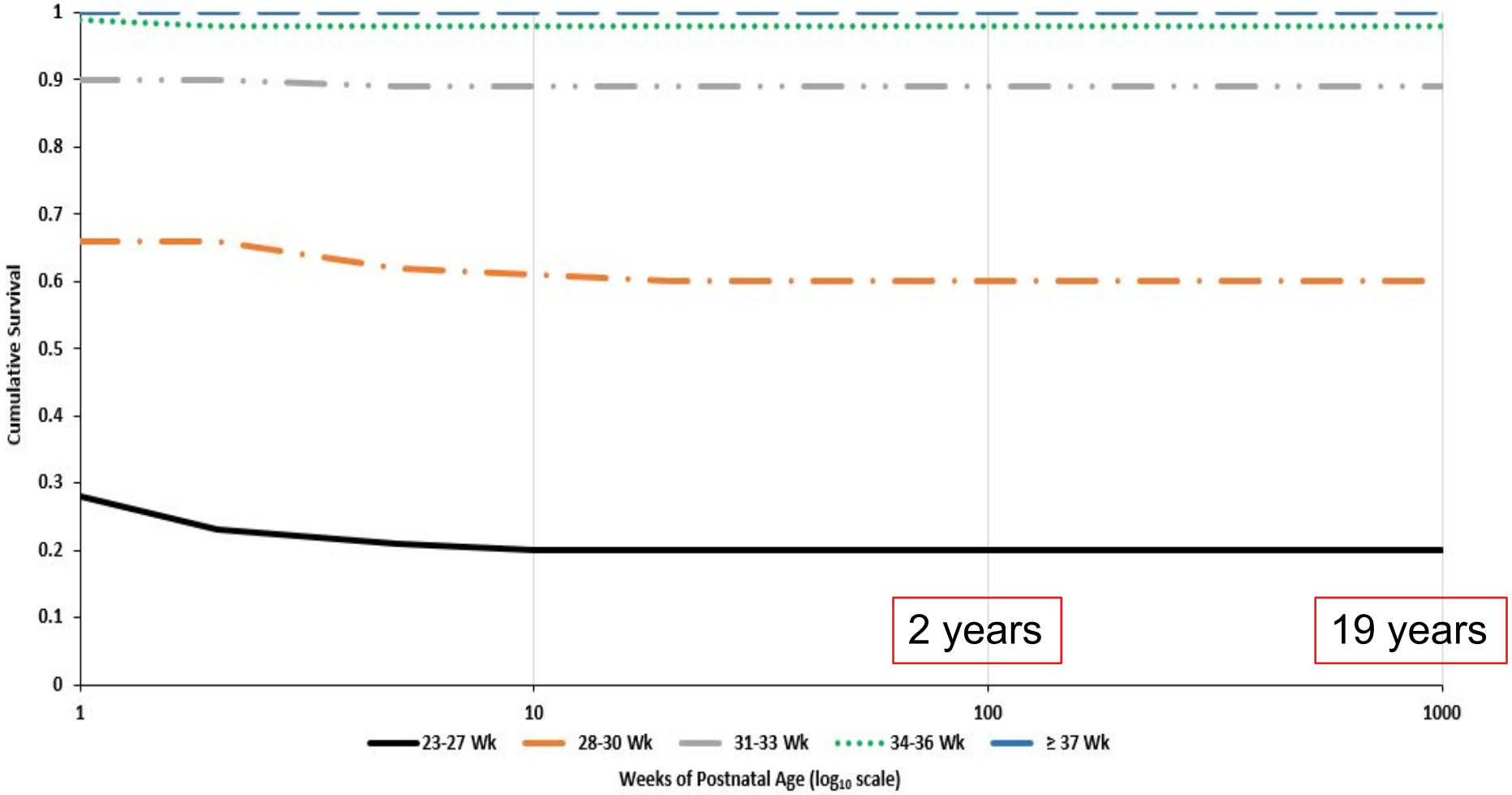
Survival to Discharge by Birth Weight



- **Increasing evidence that long-term morbidity and mortality more linked with gestational age than birth weight**

Jones, H, et al. BMC Pediatrics 2005, 5:40

Long-Term Survival by Gestational Age



- **Norwegian study of > 900,000 infants, born between 1967-1983**
- **Congenital anomalies were excluded**
- **Followed to adult life**

Moster D, et al. N Engl J Med 2008;359:262-73 – graph adapted from article

Prematurity and Risk of Chronic Kidney Disease (CKD)

- **Preterm birth interrupts kidney maturation during a critical growth period, resulting in lower nephron endowment that is lifelong.**
- **Preterm birth associated with higher risk of renal failure during infancy.**
- **New study demonstrates risk extends into childhood and mid-adulthood.**
- **Those born prematurely need long term follow up to assess kidney function.**

Risk (HRs) of CKD by Gestational Age

GA	At age 10 yrs	At age 20 yrs
< 34	3.5	1.9
34 – 36	2.6	1.5
37 – 38	1.6	1.3
39	1.0	1.0

Crump et al. BMJ 2019;365

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Prematurity and Risk of Ischaemic Heart Disease (IHD)

- **Preterm birth has been associated with increased risk of HTN and DM in adulthood.**
- **New study demonstrates gestational age is inversely associated with IHD in adulthood.**
- **Those born prematurely need early evaluation and preventive actions to reduce the risk of IHD.**

Risk (HRs) of IHD by Gestational Age at ages 30 – 43 years	
GA	**Risk**
< 37	1.53
37 – 38	1.19
39 - 41	1.0
Lower incidence for women but overall higher HR than men.	

Increased risk of DM2 at age 18-43 with HR's of 1.49. Premies may need early prevention/screening for DM.
Crump et 2019

Crump et al. JAMA Pediatrics June 3, 2019 – DOI:10:1001/jamapediatrics.2019.1327

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Long-Term Disability by Gestational Age

Disability*		
EGA	**Percent**	**RR**
23 wk to 27+6	10.6	7.5
28 wk to 30+6	8.2	4.8
31 wk to 33+6	4.2	2.2
34 wk to 36+6	2.4	1.4
≥ 37 wk	1.7	1.0

***Disability defined as work capacity which was permanently reduced by at least 50% at age 18 years or older.**

Moster D, et al. N Engl J Med 2008;359:262-73

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Prematurity and Markers of Wealth in Adulthood

- **Preterm birth increases the risk of cognitive deficits and suggests lower wealth in adulthood.**
- **New meta-analysis study**
- **Those born prematurely have lower educational qualifications, decreased rate of employment and an increased rate of receipt of social benefits in adulthood.**

Risk (ORs)	
Attain Higher Education	
32-36 weeks	0.82
< 32 weeks	0.60
Employment	
32-36 weeks	0.87
< 32 weeks	0.81
Receiving Social Benefits	
32-36 weeks	1.16
< 32 weeks	1.78

Bilgin et al. Pediatrics Vol 142, number 1, July 2018

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Underwriting a History of Prematurity

Gestational age at Birth

Birth weight

Hospital course

Complications

Current/attained age

Developmental milestones

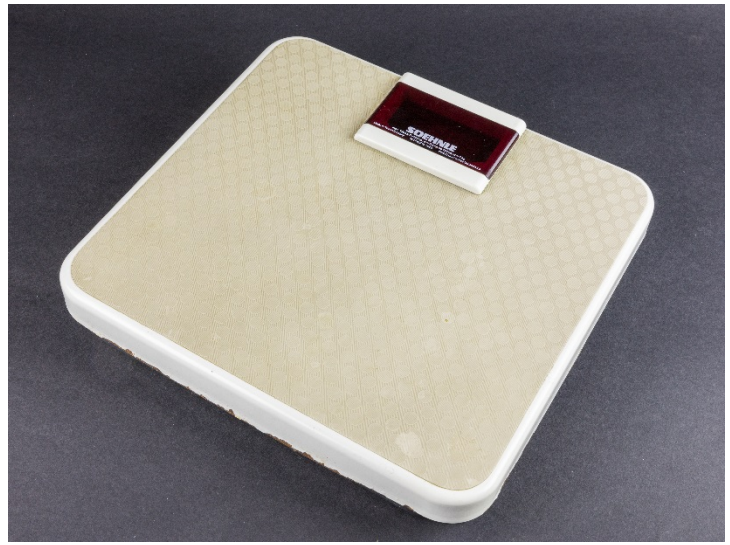
Support structure

Product type

→ **Decision**

Case 3

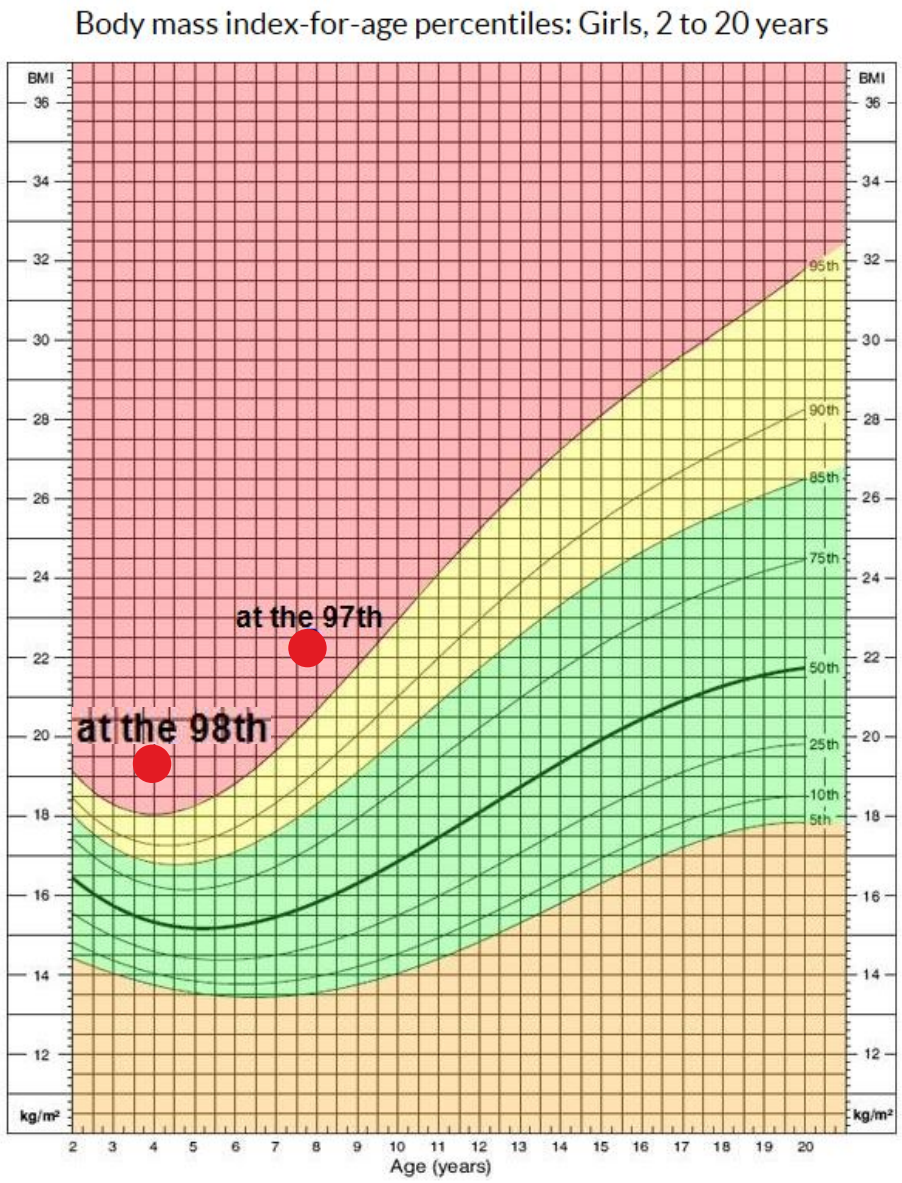
- 8 year old female – Life $500,000 – DOB 27 July 2010
- Full term, normal delivery, 2.66 kg/5.8 lbs, normal development history
- Hosp 8/14 with pneumonia – WT = 21.4 kg (95%ile) and HT = 104 cm (50%ile)
- Current app with declared WT = 24 kg and HT = 128 cm
- Call for ME: WT = 38 kg(>95%ile) and HT 130 cm (50-75%ile) >>> BMI = 22.5 (97th percentile)



What's the risk?

https://commons.wikimedia.org/wiki/File:Soehnle_bathroom_scales-1430.jpg

Case 3



1. Plot the data.
2. Look for trends.
3. Is it declared or measured?
4. Does it make sense?
5. Reference to UW manual.

Source: U.S. CDC – government imaging

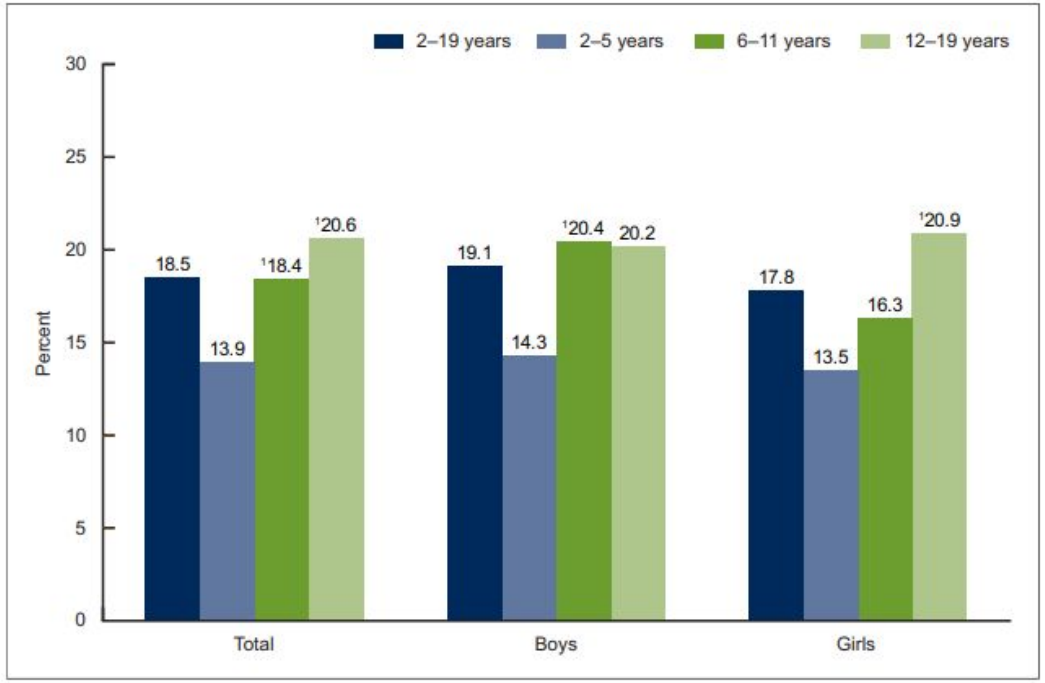
Defining the Problem: Juvenile Obesity

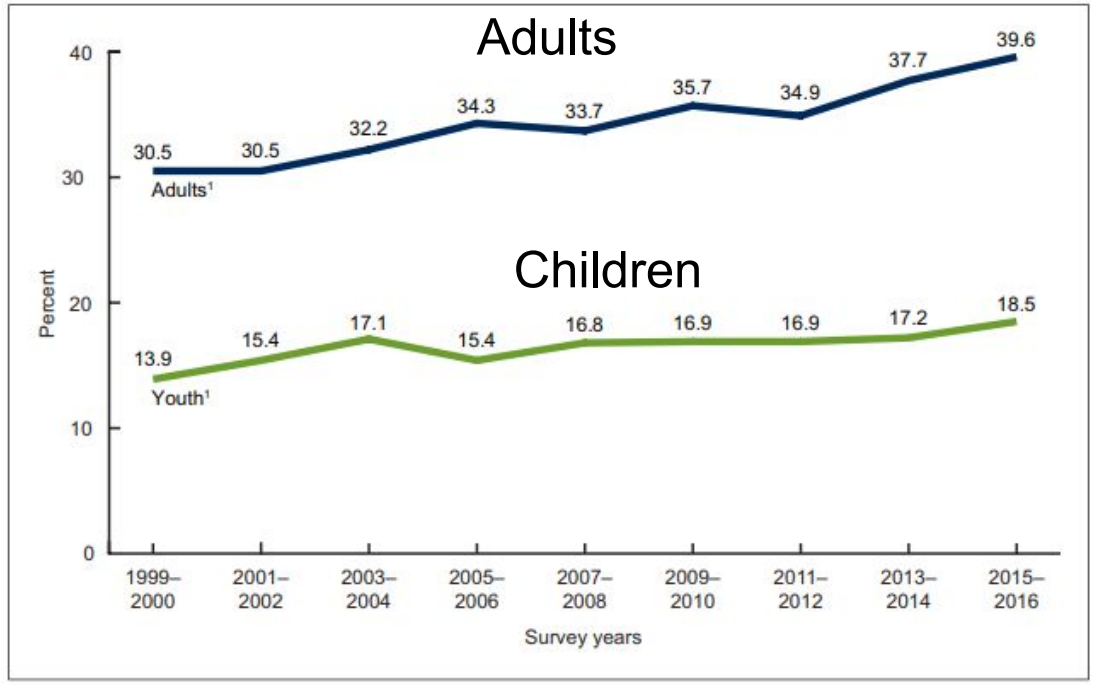
- BMI-for-age calculated for ages 2 years and older
- Length- or weight-for-age for under 2 years
- CDC Calculator: https://www.cdc.gov/healthyweight/bmi/calculator.html

Defining Pediatric Weight Status	
Underweight	< 5th percentile
Normal/healthy weight	5th-85th percentile
Overweight	85th-95th percentile
Obese	≥95th percentile

CDC reference

Obesity Prevalence U.S. and Trends





NCHS Data Brief No 288 October 2017 – U.S. government images

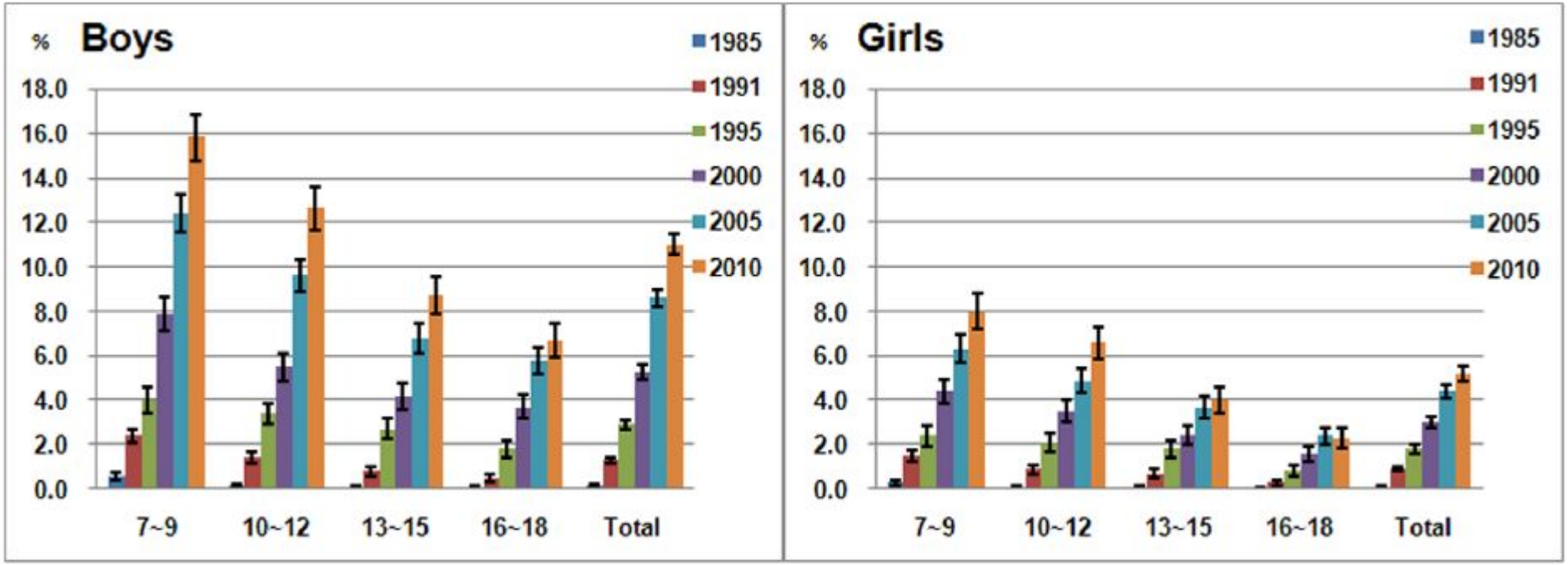
Global Perspective

Secular Trends of Obesity Prevalence in Urban Chinese Children from 1985 to 2010: Gender Disparity

Yi Song[1], Hai-Jun Wang[1*], Jun Ma[1], Zhiqiang Wang[1,2]

1 Institute of Child and Adolescent Health, School of Public Health, Peking University, Beijing, China, 2 Centre for Chronic Disease, School of Medicine, University of Queensland, Health Sciences Building, Royal Brisbane & Women's Hospital, Herston, Queensland, Australia

- **Overall, obesity 0.2% in 1985 to 8.1% in 2010.**
- **Increase pace in boys**



Trajectory of Juvenile Obesity into Adulthood

- **Extensively studied**
- **Cited study was a simulation**

Simulation of Growth Trajectories
Of Childhood Obesity into Adulthood
N Engl J Med 2017;377:2145-53

RESULTS
57% of obese children will be obese at age 35
RR of adult obesity increased with age • Age 2 years = 1.17 • Age 19 years = 3.10
Chance for obese 2 year old to be normal weight as adult = 21% Chance for obese 19 year old to be normal weight as adult = 6.1%

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Juvenile Obesity and Adult CV Mortality Risk

Body-Mass Index in 2.3 Million Adolescents and Cardiovascular Death in Adulthood
Twig, G, et al. N Engl J Med 2016;374:2430-40

- **Examined BMI in late adolescence and death from CV disease in adulthood (mean age 17 years)**
- **Cohort 2.3 million Israeli adolescents from 1967 - 2010**
- **Outcomes: death due to CHD, stroke, sudden death from an unknown cause**

RESULTS
Graded increase in risk of death from CV causes started in the 50-75th BMI percentile range!
Obese group (>95th%ile) • **HR Death CHD = 4.9** • **HR Death Stroke = 2.9** • **Sudden Death = 2.1** • **All CV cause = 3.5**
Relative to 5-24th %ile cohort

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Juvenile Obesity and Adult Risk - HTN

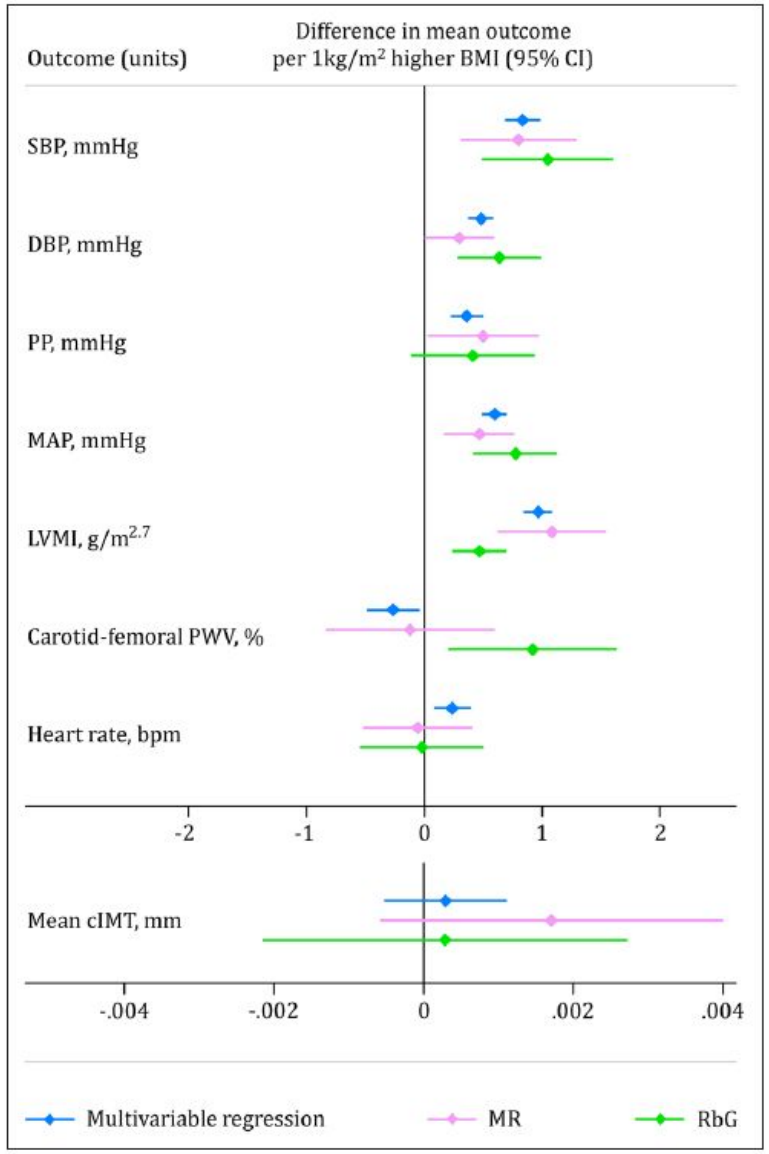
Circulation

ORIGINAL RESEARCH ARTICLE

Assessing the Causal Role of Body Mass Index on Cardiovascular Health in Young Adults

Mendelian Randomization and Recall-by-Genotype Analyses

- **Used conventional and new statistical methods to estimate causal effects of BMI on CV health**
- **Increased BMI associated with higher BP and LV mass index even in young people**



Juvenile Obesity and Adult Risk - Stroke

Childhood/young adult BMI status	Events	HR (95% CI)
Stroke		
Normal weight/normal weight	779	1 (reference)
Overweight/normal weight	36	1.17 (0.83-1.63)
Normal weight/overweight	67	1.81 (1.41-2.33)
Overweight/overweight	36	1.71 (1.22-2.38)
Ischemic stroke		
Normal weight/normal weight	578	1 (reference)
Overweight/normal weight	25	1.09 (0.73-1.62)
Normal weight/overweight	41	1.48 (1.08-2.03)
Overweight/overweight	28	1.78 (1.22-2.60)
Intracerebral hemorrhage		
Normal weight/normal weight	169	1 (reference)
Overweight/normal weight	9	1.35 (0.69-2.63)
Normal weight/overweight	24	3.03 (1.97-4.65)
Overweight/overweight	5	1.09 (0.45-2.66)

- **Swedish study**
- **Looked at impact of BMI trend from ~ age 8 through age 20 on later strokes**
- **Mean follow-up of 37 years**
- **BMI increase independently associated with both early and late stroke events**
- **BMI increase was strongly associated with increased risk of adult hypertension (OR 1.35)**

Ohlsson C, et al. Neurology 2017;89:1-7. Image: CCAL 4.0 permits unrestricted use

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Juvenile Obesity and Adult Risk - Diabetes

Change in Overweight from Childhood to Early Adulthood and Risk of Type 2 Diabetes
Bjerregaard L, et al. N Engl J Med 2018;378:1302-12

- **Danish study, men only, serial build measurements**
- **Type 2 DM status determined at age > 30 years**

Maternal DM during pregnancy leads to 29% increase in early CVD.
Yongfu et al 2019

Among adolescents, prevalence of pre-DM is 18%.
Andes et al 2019

RESULTS
Overweight at age 7, 13, and early adulthood was positively associated with risk of DM
If weight normalized by age 13 risk of adult DM = to never overweight
Normal weight by early adulthood risk = HR 1.47
Persistent overweight risk = HR 4.14

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What's the Mortality Risk?

Pediatric Overweight: A Weighty Mortality Concern

Daniel D. Zimmerman, MD, FAAP

Overweight children add a new dimension to pediatric underwriting due to their increasing numbers and unprecedented consideration in the risk stratification process. The lay and medical literature is rife with publications addressing the etiology, prevention, morbidity, and treatment of pediatric obesity. Less attention has been paid to long-term outcomes and mortality associated with pediatric overweight, although recent publications indicate that situation is changing. This review focuses specifically on mortality associated with pediatric overweight and its effect on the current and future insurability of children.

JOURNAL OF INSURANCE MEDICINE

J Insur Med 2008;40:204–209

American Academy of Pediatrics 1967 Report

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- Most overweight children remain overweight in adulthood
- Dietary treatment less effective if weight gained in childhood
- Hereditary factors may be more important than environmental

Case 4

- 15 month old male – life, CI, ESCI, TPD
- Full term, normal delivery, 2.115 kg/4.66 lbs
- Growing appropriately since birth at 3rd percentile
- No chronic disease identified
- Screening at 1, 3, 9 and 12 months - normal

Underwriting Response
****

- Apgar was 9/10
- BW was 2.115 kg/4.66 lbs
- Growth curve always around < 3 percentile
- "Underlying disorders, nutritional problems, or absorption problems would worry us much."
- Low growth may affect intellectual development
- Low weight and slow growth is severe
- PP until enters school

What's the risk?

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Case 4 - Appeal

To Whom It May Concern:

X was a low birth weight child. He has been growing appropriately since birth at 3rd %ile.

He has normal development.

He does not have any chronic illness.

He has a good complete exam.

Regards,
Dr. Y

Dr. Z's Response
****

I would like to look at everything and make my decision.

I think it might be possible to offer at least for life. If growth has been consistent (although 3rd percentile) and all milestones are being met, and no evidence of chronic disease or unfavourable family history, I would be less concerned.

I also think we might be able to look at benefits much sooner than age 5.

So, now what do you want to do?

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Children and Claims – Water and Oil?

- Emotional aspect
- Dealing with and addressing someone's child
- Parents will be the advocate
- The parents and child have experienced a loss – it may or may not be covered
- Language, communication, and sensitivity are very important

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Claim – 3 ½ year old boy with Spinal Muscular Atrophy (SMA), Type 2

History

- Critical Illness policy issued at 6 months of age
- Normal growth and development until 1 year of age
- Developed milestone regression and hypotonia
- Extensive investigations
- Genetic and clinical findings consistent with spinal muscular atrophy, Type 2
- Filed claim at age 3 years

Policy Cover Provisions

- **Paralysis** – Complete and permanent loss of use of two or more limbs through paralysis due to accident or sickness.
- **Type 1, Juvenile Spinal Amyotrophy** – The LA must be diagnosed as a Type 1 Juvenile Spinal Amyotrophy which is an infantile form of spinal muscular atrophy characterized by progressive dysfunction of the anterior horn cells in the spinal cord and brainstem cranial nerves with profound weakness and bulbar dysfunction. Electromyography and muscle biopsy are needed to confirm this diagnosis.

Spinal Muscular Atrophy

- **Spinal muscular atrophy (SMA) is characterized by degeneration of the anterior horn cells in the spinal cord and motor nuclei in the lower brainstem, which results in progressive muscle weakness and atrophy. (It is not a type of muscular dystrophy.)**
- **Autosomal recessive disorder – SMN1 and SMN2 genes**

Spinal Muscular Atrophy		
Type	**Age of Onset**	**Age of Death**
SMA type 0	Prenatal	Weeks
SMA type 1	Birth to 6 months	By age 2 years
SMA type 2	3 to 15 months	Age 25 years
SMA type 3	18 months to adulthood	Normal lifespan
SMA type 4	Adult onset	Normal lifespan

Claim Analysis

- **Does the claim meet the definition of spinal muscular atrophy type 1?**
- **Does the claim meet the definition of paralysis?**
- **What is the impact of new treatments?**

FDA News Release

FDA approves first drug for spinal muscular atrophy

New therapy addresses unmet medical need for rare disease

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For Immediate Release December 23, 2016

- Increases production of normal protein levels
- Improved motor milestones in 51 percent of those treated
- 4 loading doses, then every 4 months
- $125,000 USD per dose

Zolgensma approved in 2019 - $2.1 million

FDA - U.S. government image. www.uptodate.com

Juvenile Claims - Summary

- Juvenile claims can be very difficult to adjudicate
- A high degree of sensitivity must be maintained at all times
- Review the intent and pricing of your exclusions
- Discuss claims amongst your teams and reinsurer to develop a consistent philosophy and approach
- Seek to develop future improvements in definitions

RGA

Product Development Considerations

Growing global interest to diversify and broaden insurance offerings for juveniles.

- Increasing complexity/guarantees
- Difficult to price
- Fewer exclusions
- Neurodevelopmental disorders
- Critical illness
- Multiple benefits and guarantees
- Claims adjudication difficulties

Hot Topics

- Vaccine refusal
- Increasing suicide rates
- More genetic testing
- Vaping/e-cigarettes
- Adult survivors of childhood cancers
- Sleep deprivation
- Bullying and school stress/social media
- Sport and traumatic brain injury
- Autism

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Summary

- Underwriting and claims for children can be very challenging
- The vast array of new products and guarantees add to the complexity
- Assessment of mortality and morbidity very different than adults
- Often limited information
- Knowledge of normal development is key

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Thank You!

Questions?