



COLLATERAL DAMAGE...

How our actions of today affect
the children of tomorrow

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“Special Delivery”

- <https://www.youtube.com/watch?v=BGX4nMrnxg0>

The News

- Just imagine
- Do you feel self awareness of mortality is only evident as we age?
- Children are wise FAR BEYOND their years, and sometimes, their diagnosis

The Coat Check Card

- Leaving it at the door
- Regardless of the expected outcome we examine the information before us to guide our actions
- All humans, especially the most vulnerable deserve the OPPORTUNITY for the VERY BEST the future can offer.....

New Life

- Approximately 6500 births each year in NB
- New life $2 \times 6500 = 13000$ according to S. Bransfield-Let me explain
- If we use that theory going forward...



Natural = Safe

- The general population associates the word ‘NATURAL’ with safe
 - Cocaine, petrol, CO₂ all “natural” as well right?
- Companies mislead the general population by marketing their products using buzz words like organic, herbal, natural, plant based



Human Nature (much safer!)

- We know that the time of fetal development is the most vulnerable time in our human life
- Studies help us to co-relate the exposure to several hazards in our environment to childhood leukemia- the most commonly diagnosed childhood malignancy in North America

Children ARE NOT just little adults!

- They are in a constant state of development
- By asking their little bodies to block/digest/excrete known toxins, we are risking interruptions to that development
- Their bodies react and protect in much different ways than those of adults



Childhood Malignancies

- Worldwide, 300,000 children are diagnosed with cancer each year. In the U.S., more children die of childhood cancer than any other disease—more than AIDS, asthma, cystic fibrosis, congenital anomalies and diabetes combined.

(St. Baldricks) https://www.stbaldricks.org/why-we-exist?gclid=EAlaIQobChMIxMDym4HQ1wIVCTJpCh2WVwtWEAAYAiAAEgIHU_D_BwE

Childhood Malignancies; What do we know?

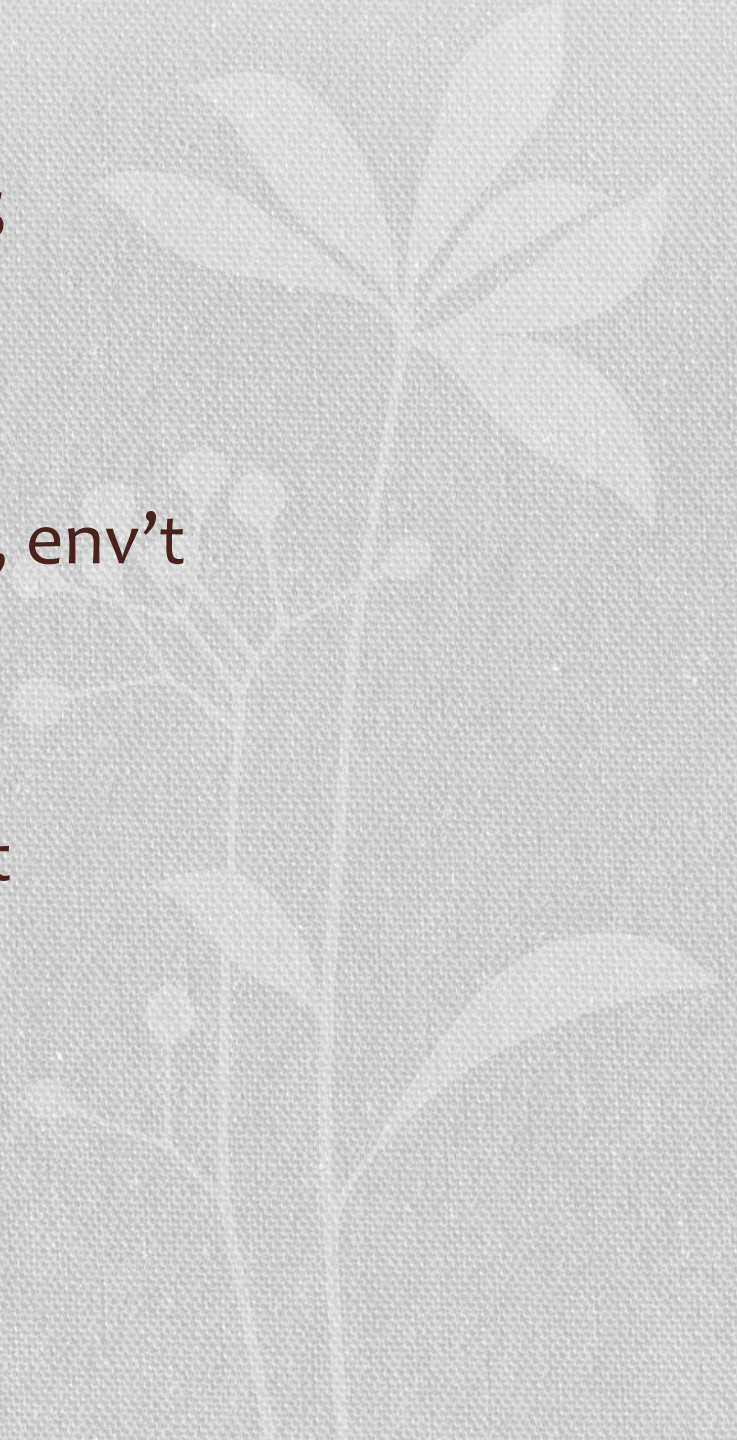
- According to WHO:
 - Causes identified as familial & genetic= 5-15%
 - Known environmental exposures =<5-10%

HOWEVER.....

UNKNOWN Causes = 75-90%

Weight...The heavy lifters

- Known
 - Genetic, age, ethnics, gender, env't
- Suggestive
 - Family hx, reproductive, env't
- Limited
 - Family hx, env't

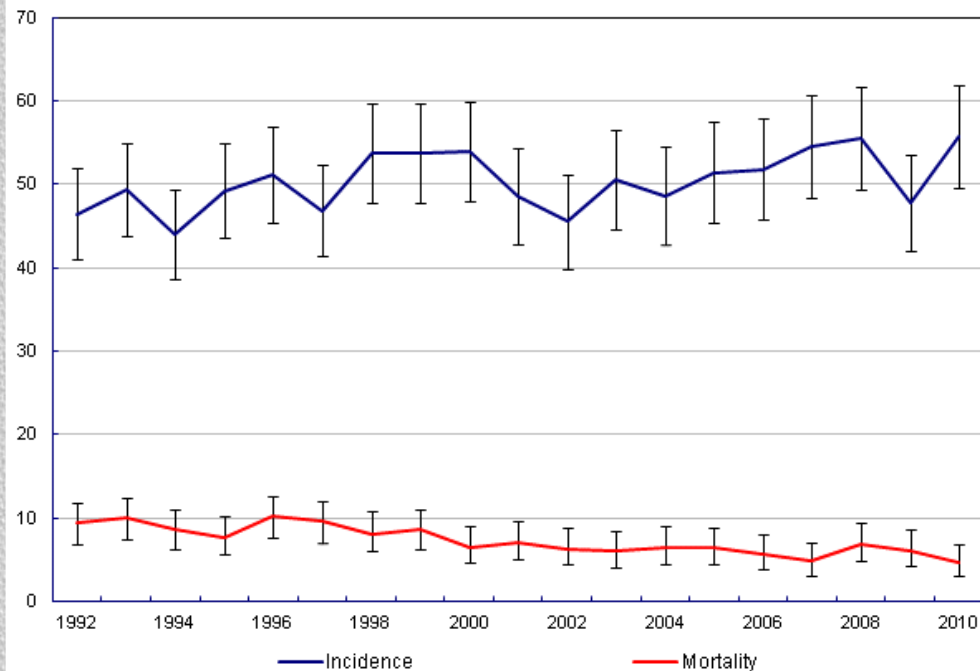


Canadian Childhood Malignancies Incidence & Mortality

Chart 5

Age-standardized leukemia incidence and mortality rates among children aged 0 to 14, by year, Canada, 1992 to 2010

rate (per million)



Note: The vertical error bars overlaid on the trend lines indicate 95% confidence intervals. Confidence intervals indicate the degree of variability in the estimates.

Source: Statistics Canada, Canadian Cancer Registry and Canadian Vital Statistics – Death Database.

Overall Canadian Incidence & Mortality

- During the 2006–2010 period, one in three deaths due to cancer in children was from a CNS tumor, and almost one in four was from leukemia (data not shown). Overall, an average of 129 children under the age of 15 died each year from cancer.

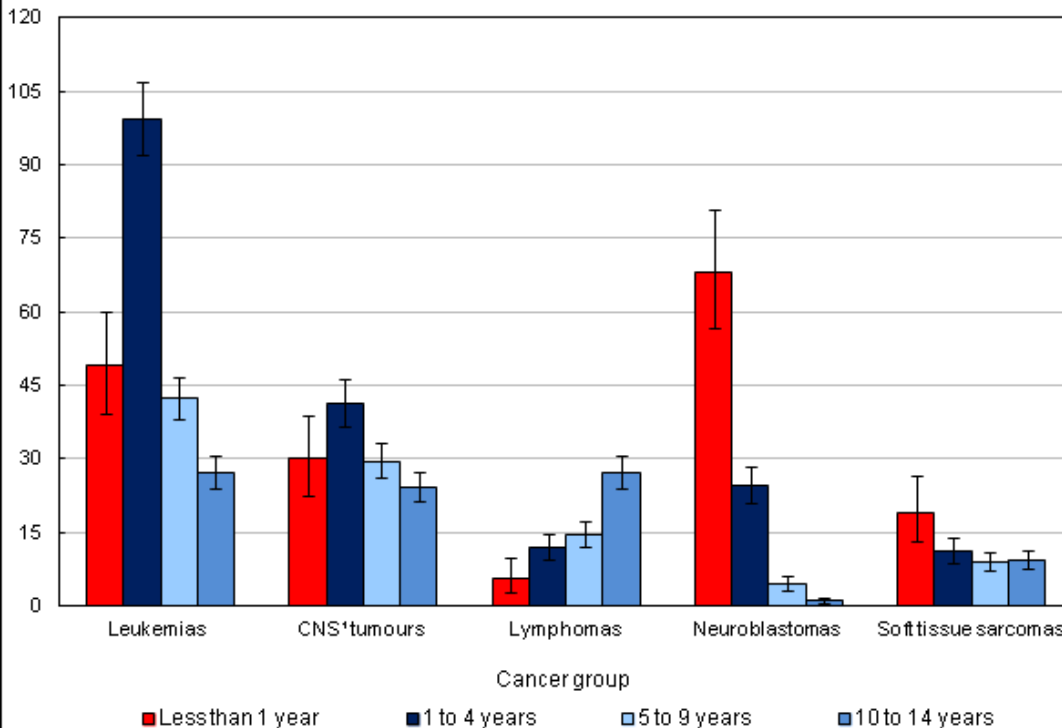
• <http://www.statcan.gc.ca/pub/82-624-x/2015001/article/14213-eng.htm>

Canadian Childhood Malignancies

Chart 3

Age-specific cancer incidence rates among children aged 0 to 14, by cancer group, Canada, 2006–2010

rate (per million)



1. CNS stands for central nervous system.

Note: The lines overlaid on the bars in this chart indicate the 95% confidence interval. Confidence intervals indicate the degree of variability in the estimates.

Source: Statistics Canada, Canadian Cancer Registry.

National Trends in Pediatric Malignancies

Three main types that account for majority of cases between ages 0-14 years:

- 1) Leukemia 32%
- 2) Brain & Central Nervous System 19%
- 3) Lymphomas 11%

National Trends in Pediatric Malignancies

Three types of cancer that account for majority of cancer related **deaths** in children ages 0-14yrs:

- 1) Brain & Central Nervous System 34%
- 2) Leukemia 26%
- 3) Neuroblastoma and other peripheral tumors 11%

In New Brunswick:

- 20-25 new cases each year
- Diagnosis and initial treatment for each takes place at IWK
- Most commonly seen:
 - Acute Lymphoblastic Leukemia
 - Brain Tumors
 - Solid Tissue Tumors

As it relates to play....



Play is the
highest form
of research

Albert Einstein

Childhood Environmental Exposures

- Thinking of environment, we must think of all aspects of ingestion in childhood; fetal, oral, airways, skin, etc
- The risk is associated with the immaturity of organs; making children's bodies less efficient at excreting toxins, therefore increasing the potential effects of the toxin
- Developmental pathways easily interrupted by toxins during growth and development both as a fetus and a developing child
- The earlier the exposures, the longer the timeframe children have to develop problems associated with those exposures

Environmental Pollutants & Pediatric Malignancies

- Known carcinogens of dioxins, arsenic, benzene, asbestos, and volatile organic compounds-all found to be in ambient air of big cities
- Ortega-Garcia et al; 2016 study in Spain with data to support that there is a trend supporting the increase in pediatric malignancies, specifically Leukemia, lymphoma, and neuroblastoma in clusters within metropolitan locations in Europe
- Always need to consider the combination of risk though, remaining objective of all information

Decisions of today and the future of tomorrow

- Foresight-We know based on experience, evidence and peer reviewed literature what is thought to be safe vs unsafe
- Hindsight-We see the changes in human health that has been studied and have made several practices changes because of it
- Plain sight- Let's move forward with the information in plain sight to implement changes to ensure we are giving children the **VERY BEST CHANCE** for a healthy future

The Discussions...

- Evidence reflects that there is clinician discomfort in their knowledge base as it relates to environmental exposures and risk for pediatric malignancies.
- Therefore a lack of discussion between providers and parents
- Indicating that the movement you as a collaborative have started is most definitely moving us in the right direction!

HOPE

- In the future
- For the children of the world
- Faith in humanity





The future lies
before you,
like a field of
fallen snow;
Be careful how
you tread it,
for every step
will show.



References

- Canadian Cancer Society; www.ccs.ca
- Childhood Cancer Canada Foundation; <https://www.childhoodcancer.ca/>
- Childhood cancer in small geographical areas and proximity to air-polluting Industries; Juan A. Ortega-García*, Fernando A. López-Hernándezb, Alberto Cárceles-Álvareza, José L. Fuster-Solerc, Diana I. Sotomayora, Rebeca Ramisd,e
- Childhood Leukemia: A Preventable Disease; Catherine Metayer, MD, PhD, a Gary Dahl, MD, b Joe Wiemels, PhD, c Mark Miller, MD, MPHd
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- St. Baldricks Foundation: https://www.stbaldricks.org/why-we-exist?gclid=EA1a1QobChM1xMDym4HQ1wIVCTJpCh2wPwrtWEAAYAAEgIHU_D_BwE
- The New Brunswick Cancer Network Cancer System Performance 2012; <https://www.gnb.ca/0031/cancer/pdf/2012/9603e-9.pdf>
- The World Health Organization: Children & Cancer Training Package; www.who.int/ceh

Thank You!

**"IT IS
BETTER
TO LIGHT
A CANDLE
THAN
CURSE
THE
DARKNESS."**

- ELEANOR ROOSEVELT

THE FRESH ROSES BLOG

