EPIDEMIOLOGY OF INFLAMMATORY BOWEL DISEASE IN PEDIATRIC PATIENTS

ERIC BENCHIMOL, MD, PhD, FRCPC
Associate Professor of Pediatrics and Epidemiology, University of Ottawa

Pediatric Gastroenterologist, CHEO IBD Centre, Children’s Hospital of Eastern Ontario

Senior Scientist and Program Director, CHEO Research Institute

Core Scientist, ICES
DISCLOSURES

• I have no conflicts of interest to disclose.
WORLDWIDE EPIDEMIOLOGY

Ng et al. Lancet 2017; 390: 3769-78.
WHAT IS VEO-IBD?

Montreal Classification

Under 17
Pediatric Cohort

Slide courtesy of Dr. Aleixo Muise.
www.neopics.org
WHAT IS VEO-IBD?

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Paris Modification
Under 10
Evidence of a distinct phenotype

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VEO-IBD

Under 6
More colonic involvement
Long-term outcomes???
WHAT IS VEO-IBD?

Montreal Classification
Under 17 Pediatric Cohort

Paris Modification
Under 10 Evidence of a distinct phenotype

VEO-IBD
Under 6 More colonic involvement Long-term outcomes???

Infants diagnosed under 1 year of age are very unique subset of VEO-IBD – “Infantile IBD”

Slide courtesy of Dr. Aleixo Muise. www.neopics.org
Ontario, Canada
Ontario Crohn’s and Colitis Cohort (1999-2008)

Evidence Guiding Health Care

Standardised incidence (per 100,000 population)

Alberta
Manitoba
Nova Scotia
Ontario
Quebec

Benchimol, et al., Am J Gastroenterol 2017; 112(7): 1120-34
Evidence Guiding Health Care

Standardised incidence (per 100,000 population)

- Alberta
- Manitoba
- Nova Scotia
- Ontario
- Quebec

Benchimol, et al., Am J Gastroenterol 2017; 112(7): 1120-34
## CANADA: INCIDENCE RATE CHANGE

<table>
<thead>
<tr>
<th>Province</th>
<th>Age group</th>
<th>Incidence rate change (95% CI)</th>
<th>% weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>0 – 15.9</td>
<td>0.0168 (-0.0099, 0.0435)</td>
<td>8.12</td>
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<tr>
<td>Manitoba</td>
<td>0 – 15.9</td>
<td>-0.0138 (-0.0518, 0.0242)</td>
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</tr>
<tr>
<td>Nova Scotia</td>
<td>0 – 15.9</td>
<td>-0.0079 (-0.0575, 0.0417)</td>
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<td>Ontario</td>
<td>0 – 15.9</td>
<td>0.0578 (0.0466, 0.0690)</td>
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<tr>
<td>Quebec</td>
<td>0 – 15.9</td>
<td>0.0278 (0.0094, 0.0462)</td>
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<tr>
<td>Subtotal</td>
<td>(I²=84.3%, p=0.000)</td>
<td>0.0210 (-0.0058, 0.0478)</td>
<td>39.09</td>
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</table>

0.5 – 15.9 years incidence rate change by type of IBD

Benchimol, et al., Am J Gastroenterol 2017; 112(7): 1120-34
### CANADA:

#### INCIDENCE RATE CHANGE (0-5y)

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<td><strong>IBD</strong></td>
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<tr>
<td>Alberta</td>
<td>0.5 – 4.9</td>
<td>0.0556 (-0.0606, 0.1738)</td>
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<tr>
<td>Nova Scotia</td>
<td>0.5 – 4.9</td>
<td>0.0314 (-0.0637, 0.1265)</td>
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<td>Ontario</td>
<td>0.5 – 4.9</td>
<td>0.0031 (-0.1289, 0.1351)</td>
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<td>Quebec</td>
<td>0.5 – 4.9</td>
<td>0.0323 (-0.0322, 0.0967)</td>
<td>20.37</td>
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<td><strong>Subtotal (I²=0.0%, p=0.838)</strong></td>
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<td>0.0323 (-0.0322, 0.0967)</td>
<td>20.37</td>
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<td><strong>CD</strong></td>
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<tr>
<td>Alberta</td>
<td>0.5 – 4.9</td>
<td>0.00732 (-0.0828, 0.2292)</td>
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<td>0.0606 (-0.0043, 0.1255)</td>
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<td><strong>Subtotal (I²=0.0%, p=0.501)</strong></td>
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<td>Alberta</td>
<td>0.5 – 4.9</td>
<td>0.0551 (-0.0035, 0.1138)</td>
<td>24.60</td>
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0.5 – 4.9 years incidence rate change by type of IBD

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EPIMAD:
CROHN’S DISEASE TRENDS

Standardised incidence rates (events/100,000)

Age category (years)
- 0 – 9
- 10 – 19
- 20 – 29
- 30 – 39
- ≥40


Chouraki V et al. Aliment Pharm Ther 2011;33:1133-42.
SCOTLAND: VEO-IBD TRENDS

Slide courtesy of David Wilson
VEO-IBD: PROGRESSION

VEO-IBD: CD SURGERY

Survival probability

Onset at <6 years vs ≥10 years:

Females: HR 0.35, 95% CI: 0.16–0.78

Males: HR 0.58, 95% CI: 0.34–0.99

OTHER VEO-IBD COHORTS: SCOTLAND

Henderson, et al. BSPGHAN Annual Meeting 2015
Slide courtesy of Dr. David Wilson
OTHER VEO-IBD COHORTS: SCOTLAND

Henderson, et al. BSPGHAN Annual Meeting 2015
Slide courtesy of Dr. David Wilson
**Onset at <6 years vs ≥10 years:**

- **Females:** HR 0.88, 95% CI: 0.47–1.63
- **Males:** HR 0.42, 95% CI: 0.21–0.85

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WHAT DOES THE FUTURE HOLD?
RISING FUTURE BURDEN

Predicted Prevalence in Canada

Historical | Predicted

IBD

CD

UC

Prevalence (per 100,000)


Year

270,000 in 2018 (0.7%) 400,000 in 2030 (1.0%)

3% \text{ per year}

Manuscript submitted for publication.
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# Pediatric IBD Epidemiology

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- **Evidence Guiding Health Care**
- **PEDIATRIC IBD EPIDEMIOLOGY**
- **Canada (per 100,000)**
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- **Canada (raw number)**
- **USA**
- **uOttawa**
## PEDIATRIC IBD EPIDEMIOLOGY

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<td>52,043</td>
<td>52,611</td>
<td>84,870</td>
<td>138,103</td>
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**Based on estimated population of children <18 years according to childstats.gov
CONCLUSIONS

• Pediatric IBD is increasing internationally
  ▶ Rates are rising most rapidly in young children

• Children with disease onset <10y:
  ▶ More often have colonic involvement
  ▶ More inflammatory, less stricturing
  ▶ UC: More mild endoscopic findings

• Rising prevalence may result in strain on the health system
QUESTIONS?

ACKNOWLEDGEMENTS:

IBD Impact Report
http://crohnsandcolitis.ca/impactreport