Special Population Case Studies

High risk children and the role of BC Children’s Hospital

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Disclosures

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- All funds paid to institution
- No personal payments
Objectives

- Explain the impact of under-immunization on the health of medically high risk children

- Illustrate how the new Family Immunization Clinic at BCCH will help to identify and immunize medically high risk children
Protection against infection

- Physical/chemical barriers
- Cells of the immune system
“Medically high risk children” - examples

- **Defects in**
  - Physical/chemical barriers
    - Cystic fibrosis & influenza
  - Cells of the immune system
    - Chronic conditions: inflammatory bowel disease (IBD) juvenile idiopathic arthritis (JIA)
    - Immunodeficiency: HIV
    - Immunosuppressive medications: children with cancer

- **Vaccine delivery problems**
  - Frequent visits to hospital
  - Children with severe behavioural problems
Increased risk of infections in IBD

<table>
<thead>
<tr>
<th>Factors that may predispose to infectious complications in IBD</th>
<th>IBD (disease type and extension, disease duration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malnutrition</td>
<td></td>
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<tr>
<td>Immunosuppressive medications</td>
<td></td>
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<tr>
<td>Leucopenia from immunosuppressive medications</td>
<td></td>
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<tr>
<td>Surgery</td>
<td></td>
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<tr>
<td>Concomitant disease</td>
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</table>

**Viral infections**
- Varicella zoster
- Virus Herpes simplex
- Cytomegalovirus
- Epstein-Barr virus

**Bacterial infections**
- Escherichia coli
- Salmonella spp.
- Staphylococcus spp.
- Mycobacterium tuberculosis
- Legionella pneumophila
- Listeria monocytogenes
- Mycobacterium avium spp. or xenopi
- Nocardia
- Clostridium difficile
- Streptococcus pneumoniae

**Parasite and fungal infections**
- Candida spp.
- Pneumocystis jiroveci (carinii)
- Aspergillus spp.
- Histoplasmosis
- Cryptococcus spp.
- Toxoplasma gondii
- Coccioides immitis
- Leishmania donovani
- Blastomycoses
Responsibility for vaccination?

- Shared responsibility
- Specialist(s)
- Family Physician
- Public Health
- Patient & Family
Cannot rely on herd immunity

Figure 1. Percentage of children completely immunized at 2 years and 7 years of age, and at Grades 6 and 9 for selected vaccines in BC, 2002-2015.

MenC = meningococcal group C; HPV = human papillomavirus; Td = tetanus-diphtheria. Data from BCCDC\textsuperscript{20}
The BCCH Family Immunization Clinic

- Opened October 16th
- Highly visible
- Easily accessible
- Expert immunization care – nurses & physicians
- Focus on the whole family
- Link between acute health care and public health
The practicalities

- **Opened October 16\(^{th}\)**
  - Flu shots only initially
  - All vaccines from January 15\(^{th}\), 2018

- **Ambulatory Care Building, main floor, opp. clinic 7**
  - High traffic area
  - “Starbucks building”

- **Drop-in and pre-booked appointments**

- **Not intended for staff or local residents**
A story of many firsts

- First in-hospital immunization clinic in Canada
- First clinic at BCCH to offer a drop-in service
- First hospital in BC with full access to immunization records
- First clinic to integrate ‘Belly Breathing App’ into practice
- First clinic to offer care to all friends & family members
- First group of staff to complete new BCCH training program
- First area to systematically engage patients in research
- First area at BCCH to be paperless (almost!)
What do we do?

- Routine & catch-up vaccines
- Immunization counselling
  - After previous adverse events
  - Vaccine hesitancy
  - Complex medical conditions
- Personalized vaccine schedules for complex cases
  - Cancer
  - Other immune suppressive medications
- Nurse and physician consultations
- Immunization education, advocacy and outreach
Education in other clinics at BCCH

1. Ensure fully immunized to date from the start
   - If not, then initiate catch up ASAP

2. Ensure family members are fully immunized

3. Anticipate immunosuppression
   - Timely immunization (especially live vaccines)
   - Extra vaccines and/or doses may be needed

4. Ongoing consideration
   - Extra vaccines and/or doses, travel vaccines
The numbers so far

- 12 weeks flu only + 1 week all vaccines
- 1,921 patients immunized so far
- 1,896 influenza shots
  - 2016: 1,525 shots
  - 2015: 1,556 shots
  - 2014: 957 shots
## Who’s coming?

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>%</th>
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<tbody>
<tr>
<td><strong>TOTAL</strong></td>
<td>1,851</td>
<td></td>
</tr>
<tr>
<td><strong>Patients + family members</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- BCCH patients</td>
<td>757</td>
<td>41%</td>
</tr>
<tr>
<td>- Mother</td>
<td>354</td>
<td>19%</td>
</tr>
<tr>
<td>- Father</td>
<td>188</td>
<td>10%</td>
</tr>
<tr>
<td>- Siblings</td>
<td>74</td>
<td>4%</td>
</tr>
<tr>
<td>- Grandparent</td>
<td>23</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Other children</td>
<td>185</td>
<td>10%</td>
</tr>
<tr>
<td>- Other adults</td>
<td>267</td>
<td>14%</td>
</tr>
<tr>
<td>- Unknown</td>
<td>3</td>
<td>0.2%</td>
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Part of BCCH Immunization Project

1. A storefront immunization clinic at BC Children’s Hospital
2. Provincial outreach and counselling for medically complex kids
3. Education: general public, practicing health professionals and policy makers
4. Training the next generation of health professionals
5. Research and the Vaccine Evaluation Center
Thank you

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