New Priorities & Advances in Well-baby/Well-child Care from the 2014 Rourke Baby Record

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RBR authorship, endorsement and support

- Co-authors: Drs. Leslie Rourke, Denis Leduc and James Rourke
- Epidemiology support: Dr. Patty Li, Bruno Riverin, Dr. E Constantin
- Organizational consultation and endorsement: CPS, CFPC, DC
- Financial, academic or in-kind support (past 10 years):
  - Government of Ontario
  - Memorial, McMaster and Western Universities
  - OCFP
  - Licensing fee for EMR use of RBR (if firm not in Ontario) goes to the MUN RBR Development Fund
Disclosure of Commercial Support

• No royalties received from RBR
• No honoraria from commercial interests
• Licensing fee for EMR use of RBR goes to the MUN RBR Development Fund – no honorarium from this

• Potential for conflict of interest in this talk – nil

• Mitigating potential bias – not applicable
Learning Objectives

At the end of this session, participants will be able to:

1. describe new preventive care information for infants/young children including growth monitoring, timely introduction of solid foods and allergenic foods, healthy sleep habits, etc.

2. demonstrate the most efficient use of the 2014 Rourke Baby Record and its related parent and healthcare provider resources (www.rourkebabyrecord.ca)
Rourke Baby Record
Evidence-based infant/child health maintenance guide

www.rourkebabyrecord.ca

• validated system for preventive care for 1 wk to 5 yrs of age
• developed in 1979, published in 1985, most recent edition 2014
• co-authors Drs. Leslie Rourke, Denis Leduc (past Pres CPS) and James Rourke
• endorsed by CFPC, CPS and DC
2014 Rourke Baby Record

**Resources: 1: General (February 2014)**

**Date of Birth:** November 13

**Gender:** Female

**Birth Weight:** 3,200 grams

**Birth Length:** 50 centimeters

**Apgar Score:** 9, 10

**Mother’s Name:** Jane Smith

**Father’s Name:** John Doe

**Due Date:** July 20

**Length:** 11 months

**Weight:** 9 kilograms

**Head Circumference:** 45 centimeters

**Temperature:** 36.8°C

**Type of Delivery:** Vaginal

**Mother’s Age:** 32

**Father’s Age:** 35

**Number of Siblings:** 0

**Breastfeeding Status:** Currently breastfeeding

**Medical History:** None

**Allergies:** None

**Medications:** None

**Immunizations:** None

**Developmental Milestones:**
- Sitting without support
- Rolling over
- Crawling
- First teeth (6 months)

**Behavior:**
- Happy, active, and responsive

**Sleeping:**
- Nighttime
- Naps

**Eating:**
- Breastfeeding
- Solid foods (first food at 6 months)

**Socialization:**
- Playing with toys
- Smiling

**Health:**
- Well

**Contact Information:**
- Jane Smith
- 123 Main Street
- Phone: 555-1234

**Notes:**
- First birthday coming up in February

**Recommended Resources:**
- Parenting books
- Local parenting groups

**Follow-up:**
- 1 year

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**Nutrition:**

- Breastfeeding
- Solid foods

**Physical Examination:**

- Growth parameters
- Medical examination

**Problems and Concerns:**

- None

**Immunizations:**

- None

**Follow-up:**

- 1 month

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**Follow-up:**

- 1 year
Is it normal for my baby to...

Parents often wonder about their child's health, growth and development, leading to the question: "Is my child healthy and growing and developing normally?"

The RBBR Parent Resources Website is a place where you can find parent-friendly resources to help answer your questions about your child.

New for 2016: Rourke Baby Record Well Baby Information Sheets are now available to answer your questions on feeding, safety, development, vaccinations, and other common issues for babies at specific ages.

1-2 Weeks | 1 Month | 2 Months | 3 Months | 4 Months | 6 Months | 12 Months | 15 Months | 2-3 Years | 4-5 Years

For a specific issue: You can browse 'By Topic' or 'By Age' of your child, using the links on the sides of this page, or you can "Search" for a topic (see above). These will bring you to resources about normal child growth and development, along with information on common health topics such as feeding, injury prevention, vaccinations, and some common illnesses. We try to keep these links up to date, but websites are constantly being restructured, so if a link is broken, go to the home page of the source (e.g., the Canadian Paediatric Society - Caring for Kids, Hospital for Sick Children – About Kids Health, Safe Kids Canada, Dentists of Canada, Health Canada) and search within that website.
What’s new in preventive care of infants and young children?

- Case-based discussion
- Revised or new content in 2014

RBR is shown in aqua print.
Case # 1: Is my baby getting enough milk?

- 2 week old full term infant
- First child to professional parents in late 30s
- Birth weight – 3500 g
- Breastfeeding started well but mother afraid milk supply is lessening and baby seems hungry all the time.
Newborn Nutrition

➢ Loses ≤ 7% body wt, regains by ~14 days

➢ ~ 6 wet diapers/day in 1st wk, then 6 – 8/day

➢ Age 2 weeks to 3 months: 6 - 7 oz = 180 – 210 g weight gain/week

➢ Appetite spurts at 8 – 12 days, 3 – 4 wks, 3 months

➢ Breastfeeds ~ 8-12x in 24 hours

Nutrition for Healthy Term Infants: 0 – 6 months

OSNPPH http://www.osnpph.on.ca/resources/index.php

Breastfeeding: How do you know your baby is getting enough milk?
Consider failure to thrive – if any of:

- Wt <5th %ile for age/sex on ≥ 1 occasion
- Wt <80% of ideal body wt for age/sex
- Wt depressed in proportion to ht
- Wt trajectory crossing 1 or more major %ile lines – especially away from 50%ile
- Consider if rate of daily wt gain < expected
  - 0 – 3 mos: 26 – 31 g/day
  - 3 – 6 mos: 17 – 18 g/day
  - 6 – 9 mos: 12 – 13 g/day
  - 9 – 12 mos: 9 – 13 g/day
  - 1 – 3 yrs: 7 – 9 g/day
Cow’s milk based iron fortified until 9 – 12 months.

Approx milk consumption/24 hours:
- 1 - 2 wks: 5 oz (150 ml)/kg body wt
- 1 month: 15 - 25 oz (450 - 750 ml)
- 2 months: 20 - 30 oz (600 - 900 ml)
- 4 - 6 months: 25 - 36 oz (750 - 1080 ml)
- 9 months: 24 - 32 oz (720 - 960 ml)
- 12 - 18 months: 16 - 24 oz (500 – 750 ml)
Remember Vitamin D

http://www.cps.ca/en/documents/position/vitamin-d

• Routine **Vitamin D supplementation** of 400 IU/day (800 IU/day in high risk infants/areas) is recommended for all breastfed full term infants until the diet provides a sufficient source of Vitamin D (1 - 2 years of age). 1,000 IU/day for breastfeeding mothers.
2014 RBR: Growth monitoring

- WHO Growth Charts for Canada: Format revised March/14
  www.whogrowthcharts.ca
  - Percentile lines
  - Wt-for-age >10 yrs allowed but not best
  - Includes BMI calculator and tables for 2 – 19 yrs

- Adjust for age until 24 – 36 months in premature infants < 37 wks gestation
Case #2: What should I feed my baby?

- 4 ½ month old full term infant, exclusively breastfed
- Was sleeping through the night and now waking – seems hungry
- Grandma says baby needs solids.
TRANSITION TO SOLID FOODS

http://www.caringforkids.cps.ca/handouts/feeding_your_baby_in_the_first_year

When developmentally ready:

- Transition from sucking to spoon feeding
- Holds head up well
- Sits with little help
- Opens mouth when food offered
- Turns head to refuse food
Introduction of Allergenic Foods

• Evidence supports introduction of allergenic foods (at home) between 4-6 months to reduce the risk of food allergy but against complimentary foods before 12 weeks
  – Complimentary foods at 4-6 months may include cow's milk protein (except whole cow's milk), egg, soy, wheat, peanut, fish and shellfish
• Avoidance of allergenic foods during pregnancy and lactation not recommended
• Total duration of breastfeeding (without artificial milk) may be more important for allergy prevention than exclusive breastfeeding
• Consider partial hydrolysate or extensively hydrolyzed formula in high risk children when breast feeding not possible.
• Allergy testing/consultation prior to allergenic foods not recommended unless severe eczema or sib with peanut allergy

Case #3: My baby won’t fall asleep

- 2 month old full term breastfed infant
- Birth weight – 3200 g
- Parents are unable to get their baby to fall sleep unless they rock her until she is soundly asleep.
- She wakes at least 3 times each night and is now spending most of every night in her parents’ bed.
Healthy sleep

• **Safe sleep**: on back; safe crib; room sharing x 6 mo; avoid bed sharing; change head position; no sleep positioners

• **Night waking (NAP vs. CIO)**:
  – common: 20% of infants and toddlers without night feeding
  – counselling ➔ v night waking, esp counselling within 1 – 3 wks of age


• **Healthy sleep habits/routines**: Normal sleep (quality and quantity for age) is associated with normal development

  (fall asleep independently “self-soother”; regular schedule; security object; relaxing bedtime routine ending in bedroom; same sleeping environment each night in a cool, quiet, dark room without a TV or computer)
2014 RBR: Developmental surveillance

• Development surveillance: assessing risk (asking re parental concerns re their child's development, observing the child, identifying risk/protective factors, documenting milestone attainment)

  vs.

Development screening: standardized tools

• Red flag approach

• Fair evidence for most milestone items including “No parent/caregiver concerns”

• ASD: Revised M-CHAT-R/F with electronic format.

• New web links
In Summary

• Well-baby care is an important part of healthcare. Early child development and experience affect learning and behaviour as well as physical, mental and emotional health for a lifetime – and into the next generation.

• Parents have many questions with a new infant, and knowing what is normal or common helps you provide good healthcare.

• 2014 edition of the Rourke Baby Record provides a validated system for efficient, evidence-informed well baby/child care from 1 wk to 5 years: www.rourkebabyrecord.ca
General Resources for Healthcare Providers

• Rourke Baby Record:  www.rourkebabyrecord.ca

• CPS position statements:  www.cps.ca

• Dietitians of Canada website:  www.dietitians.ca

• Health Canada:  http://www.hc-sc.gc.ca

• Local printed resources:  e.g. Government/PHU/etc
General Resources for Parents

• Rourke Baby Record Parent Portal:  www.rourkebabyrecord.ca

• CPS Caring for Kids:  www.caringforkids.cps.ca

• HSC About Kids’ Health:  www.aboutkidshealth.ca

• Parachute (Safe Kids Canada):  http://www.parachutecanada.org/


• Health Canada:  http://www.hc-sc.gc.ca

• Local printed resources:  e.g. Government/PHU/etc
Questions?
Further information

29-40: RBR website features
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       other
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Use of the 2014 RBR Resources

www.rourkebabyrecord.ca

The Rourke Baby Record (or RBR for short) is a system that many Canadian doctors and other health care professionals use for well-baby and well-child visits for infants and children from 1 week to 5 years of age. It includes forms (Guides I to V) for charting the well-baby visits as well as supporting resources for healthcare professionals.

The RBR Parent Resources Website is a place to find reliable parent-friendly resources and is designed to help parents answer their questions about their children up to age 5 years.
2. News items

The Rourke Baby Record
The RBR contains guidelines and information for comprehensive well baby/child care including:

- growth and nutrition monitoring,
- developmental surveillance,
- physical examination parameters,
- immunizations, and
- anticipatory guidance on safety, family, behaviour and health promotion issues.

The Rourke Baby Record is endorsed by the Canadian Paediatric Society (CPS), the College of Family Physicians of Canada (CFPC), and Dietitians of Canada (DC).

Features of this Website
(in development)

Latest News
September 2014: Rourke Baby Record Parent Information Sheets
September 2014: One Visit per Page Format of English National 2014 RBR
August 2014: Revised format for WHO growth charts for Canada (March 2014)
June 2014: Launch of the 2014 RBR at the 61st Annual Conference of the Canadian Paediatric Society
May 2014: 2014 Rourke Baby Record is now available

View all News articles
3. Download the RBR and the WHO Growth Charts for Canada
4. The Interactive RBR provides direct links to evidence and resources
5. Reliable resources for parents
6. Summary of Evidence from the RBR Resources Pages 1 - 3
7. Updates/Changes in the most recent edition of the RBR
8. Literature Review for items in the RBR: critically appraised and annotated for levels of evidence and strength of recommendation

### Literature Review

This annotated bibliography lists the literature which has been used to determine the strength of recommendation for selected items included in this review table are not exhaustive, and were selected by the authors for their relevance in supporting the evidence for the items included in the 2014 RBR.

For new literature reviewed for the 2014 RBR, the level of evidence has been evaluated where possible using both the former Canadian Task Force on Preventive Health Care and the GRADE classification systems.

Strength of recommendation retains the previous scheme using “Good, Fair, and Inconclusive evidence/Consensus.”

Thanks to Dr. Patricia Li (MD, MSc, FRCPC, FAAP), Assistant Professor of Paediatrics McGill University, and to Bruno Rivett, for their exemplary work on this huge task.

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<th>Growth</th>
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<th>Education And Advice</th>
<th>Development</th>
<th>Physical Examination</th>
<th>Investigations</th>
<th>Immunization</th>
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</table>

### NUTRITION

#### Breastfeeding

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<thead>
<tr>
<th>Breastfeeding Recommendations</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exclusive breastfeeding is recommended for the first six months of life for healthy term infants.</td>
<td>Good</td>
</tr>
<tr>
<td>2. Breastfeeding is the optimal food for infants, and breastfeeding with (with complimentary foods) may continue for up to two years and beyond unless contraindicated.</td>
<td>Consensus</td>
</tr>
<tr>
<td>3. Maternal support, both antepartum and postpartum, increases breastfeeding and prolongs its duration.</td>
<td>Consensus</td>
</tr>
<tr>
<td>4. Implement policies and practices of the Baby-Friendly Initiative (BFI).</td>
<td>Good</td>
</tr>
</tbody>
</table>
9. Publications: including RBR validation study results

10. Related Initiatives

Greig Record for children 6 – 17 yrs.

Nunavut Well-baby Record
11. Bottom Menu
Benefits of using the RBR

• Freely available – in public domain
• Aide memoire/Team based care
• Validated/Evidence informed
• Continual updating
• Interdisciplinary input
• Different formats
• Can modify for unique locale
• Associated resources
Validation study of the RBR

http://www.biomedcentral.com/1471-2296/10/28

• The RBR was used by 78.5% (402/512) of successfully contacted FP/GPs who did well-baby care in 3 Ontario cities.

• **Part I:** Questionnaire respondents (N = 41/100) used the RBR in several ways:
  – most helpful for:
    • assessing healthy child development,
    • charting/recording the visits,
    • managing time effectively,
    • addressing parent concerns,
    • identifying health problems, and
    • identifying high risk situations.
  – least helpful as a tool for managing or for referring identified health problems.
Validation study of the RBR

- **Part II**: Chart audit of a total of 1,378 well-baby visits on 176 children performed by 38 FP/GPs.

- Documentation of well-baby care provided by 20 FP/GPs who used the RBR was compared to that by 18 non-users:

  **RBR users more likely to document:**
  - type of feeding (p = 0.023)
  - discussion of safety issues (p < 0.001)
  - assessment of development (p = 0.001)
  - overall comprehensiveness (p < 0.001)

  **No statistical difference in documenting:**
  - growth measurement (p = 0.097)
  - physical examination (p = 0.828)
Strength of the evidence according to categories

1. Choice of items
   • Evidence: Impact on health from 0 – 5 years
   • Effectiveness: If applied, included items will improve outcomes
   • Efficiency: Practical to apply and prioritize

2. Classification used for evaluating level of evidence: epidemiologic surveillance using former CTFPHC and GRADE

3. Changes over 4 editions of the RBR
RBR 2006: Strength of Evidence

- **NUTRITION**
  - Consensus: 40%
  - Fair: 20%
  - Good: 40%

- **INJURY PREVENTION**
  - Consensus: 30%
  - Fair: 40%
  - Good: 30%

- **BEHAVIOUR AND FAMILY ISSUES**
  - Consensus: 50%
  - Fair: 30%
  - Good: 20%

- **OTHER ISSUES**
  - Consensus: 20%
  - Fair: 50%
  - Good: 30%

- **PHYSICAL EXAM**
  - Consensus: 60%
  - Fair: 20%
  - Good: 20%
RBR 2009: Strength of Evidence

- **NUTRITION**
  - Consensus: 40%
  - Fair: 30%
  - Good: 30%

- **INJURY PREVENTION**
  - Consensus: 50%
  - Fair: 30%
  - Good: 20%

- **BEHAVIOUR AND FAMILY ISSUES**
  - Consensus: 50%
  - Fair: 30%
  - Good: 20%

- **OTHER ISSUES**
  - Consensus: 50%
  - Fair: 30%
  - Good: 20%

- **PHYSICAL EXAM**
  - Consensus: 50%
  - Fair: 20%
  - Good: 30%
RBR 2011: Strength of Evidence

- **NUTRITION**
  - 100% CONSENSUS
  - 0% FAIR
  - 0% GOOD

- **INJURY PREVENTION**
  - 60% CONSENSUS
  - 20% FAIR
  - 20% GOOD

- **BEHAVIOUR AND FAMILY ISSUES**
  - 70% CONSENSUS
  - 30% FAIR
  - 0% GOOD

- **OTHER ISSUES**
  - 80% CONSENSUS
  - 10% FAIR
  - 10% GOOD

- **PHYSICAL EXAM**
  - 90% CONSENSUS
  - 10% FAIR
  - 0% GOOD
RBR 2014: Strength of Evidence

- **Nutrition**
  - Consensus: 60%
  - Fair: 10%
  - Good: 30%

- **Injury Prevention**
  - Consensus: 40%
  - Fair: 20%
  - Good: 40%

- **Behaviour and Family Issues**
  - Consensus: 50%
  - Fair: 10%
  - Good: 40%

- **Other Issues**
  - Consensus: 60%
  - Fair: 10%
  - Good: 30%

- **Physical Exam**
  - Consensus: 70%
  - Fair: 10%
  - Good: 20%
RBR 2006: Strength of Evidence

<table>
<thead>
<tr>
<th>Category</th>
<th>NUMBER OF ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUTRITION</td>
<td>GOOD: 18, FAIR: 1, CONSENSUS: 14</td>
</tr>
<tr>
<td>INJURY PREVENTION</td>
<td>GOOD: 4, FAIR: 6, CONSENSUS: 8</td>
</tr>
<tr>
<td>BEHAVIOUR AND FAMILY ISSUES</td>
<td>GOOD: 2, FAIR: 4, CONSENSUS: 12</td>
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<td>PHYSICAL EXAM</td>
<td>GOOD: 2, FAIR: 4, CONSENSUS: 12</td>
</tr>
</tbody>
</table>
RBR 2009: Strength of Evidence

- NUTRITION
- INJURY PREVENTION
- BEHAVIOUR AND FAMILY ISSUES
- OTHER ISSUES
- PHYSICAL EXAM

Number of Items

- GOOD
- FAIR
- CONSENSUS
RBR 2014: Strength of Evidence

- **NUTRITION**: GOOD (4), FAIR (2), CONSENSUS (19)
- **INJURY PREVENTION**: GOOD (6), FAIR (5), CONSENSUS (2)
- **BEHAVIOUR AND FAMILY ISSUES**: GOOD (5), FAIR (4), CONSENSUS (8)
- **OTHER ISSUES**: GOOD (4), FAIR (5), CONSENSUS (7)
- **PHYSICAL EXAM**: GOOD (5), FAIR (3), CONSENSUS (11)
2014 RBR: General Items

- Format:
  - Guides I (1w, 2w, 1m), II (2m, 4m, 6m), III (9m, 12m, 15m), IV (18m, 2-3y, 4-5y); Guide V: immunization chart; Resources pages 1 – 3.
  - Footnotes (1, 2, 3) refer to Resources 1, 2, 3.
  - Font = strength of recommendation: good, fair, inconclusive evidence/consensus
  - Shaded bar: For each item discussed, indicate “v” for no concerns, or “X” if concerns

- Endorsement: CFPC, CPS, and DC

- Web links updated and hyperlinked to document description (vs URL)
2006 WHO Child Growth Standards
http://www.who.int/childgrowth/en/

• MGRS: Based on >8,000 children from 6 countries
  – Brazil, Ghana, India, Norway, Oman, USA – NOTE: no East Asian
  – only 3% inter site differences

• raised under optimal health conditions = standards
  – exclusive or predominantly breastfed x >4 mos,
  – complementary foods by 6 mos,
  – c/t breastfed x > 12 mos,
  – immunized,
  – healthcare,
  – nonsmoking environment)

• WHO growth “standards” vs. CDC growth “references”
2006 WHO Child Growth Standards

Changing from CDC to WHO growth charts results in different prevalence of underweight, overweight and obesity:

• 0 – 6 months: WHO charts reflect a heavier sample- due to faster initial rate of wt gain in breastfed vs formula fed infants
  • Higher rates of under-nutrition
  • Lower rates of overweight and obesity

• > 6 months: WHO charts reflect a taller lighter sample- due to slower rate of wt gain in breastfed & ideally nourished
  • Lower rates of under-nutrition
  • Higher rates of overweight and obesity
Measuring growth

- Change over time is of more value than single measurement
- Use proper equipment
- Measure weight and length/height at all well-baby visits; HC up to 2 yrs if normal
- Plot on growth charts
  - 0 – 24 mos: length-for-age; wt-for-age; HC-for-age; wt-for length
  - 2 – 10 yrs: ht-for-age; wt-for-age; BMI-for-age
  - >10 – 19 yrs: BMI-for-age; + ht-for-age;
- Usually regain BW by 1 – 3 wks; BW x2 by 6 mo; BW x3 by 1 yr
Failure to thrive – Mechanisms:

• Inadequate nutrient intake
  – E.g. feeding technique, deprivation, wrong foods, GERD, psychosocial, cleft palate, sucking or swallowing dysfn, etc

• Inadequate appetite or inability to eat large amts
  – E.g. psychosocial, CVS/Resp/CNS disease, CP, anemia, muscle weakness, genetic syndromes, etc

• Inadequate nutrient absorption or increased losses
  – E.g. malabsorption, vomiting, GI obstruction, diarrhea, biliary atresia, etc

• Increased nutrient needs or ineffective utilization
  – E.g. hyperthyroidism, malignancy, chronic disease (systemic, infection, metabolic, resp, CVS), etc.
2014 RBR: Nutrition

• Nutrition for Healthy Term Infants: 0 – 6 mo; 6 – 24 mo
• Introduction of solids as per NHTI: 6 – 24 mo
  – More flexible start date; iron rich foods first; allergenic foods
  – 9 – 12 mo for cow’s milk as primary milk source

• Vitamin D supplement amt (“high risk” vs “northern communities”) and duration (1 – 2 yrs)

• New info/resources:
  – Infant formulas and safe preparation;
  – Breastfeeding protective against SIDS;
  – Dietary fat content;
  – Fish consumption;
  – Use of open cup rather than “sippy” cup;
  – Avoidance of sweetened juices/liquids
Case #: The spitty baby

- 6 week old full term infant
- Birth weight – 4000 g
- Mom concerned about baby spitting up after most feeds and heard that there is medication for this.
Spitting up – aka GE Reflux

- Is physiological due to immature LES

- Uncomplicated GER (GE reflux) occurring ≥ once daily
  - Common: 50% at 3 months; 61% at 4 months; 5% at 10 – 12 months
  - “Happy spitter”: good wt gain, feeds well, not overly irritable, N hx/P/E

- Warning signs: of GI disease/obstruction; systemic or neurologic disease; or nonspecific failure to thrive

- GERD — if pathologic consequences e.g. esophagitis, nutritional or resp complications,
  - Management:
    - Trial of milk free diet
    - Thickened feeds
    - Avoid second hand smoke
    - Acid suppression: ?PPI or ranitidine
Spitting up: Prevention and Treatment

http://www.gikids.org/content/8/en/Reflux-GERD

- Burping - minimum midway and at end of feed
- Bottle Nipple:
  - proper size
  - nipple completely full of milk
- Breast Fed:
  - proper latch
  - no smacking sounds
- Aware of baby’s fullness/hunger
- Avoid activity after eating
- Upright position during and after feed
  - Avoid the “Weiner” pose
Case #: Does my baby have a milk allergy?

- 6 month old full term infant
- Birth weight – 3750 g
- Mom concerned re 1 wk history of blotchy rash worse after feeding

What else do you want to know?
Infant Food Allergies

- Abnormal immune hypersensitivity rcn to proteins in food
- Increasing prevalence – why?
- Types:
  - IgE mediated → immediate cutaneous sx or anaphylaxis
  - NonIgE mediated → chronic skin &/or GI sx (blood in stool)
  - Both
- Peak prevalence = 6 – 8% @ 1 yr age
  - Vs adverse food rcns reported by parents = 35% by age 2y
## Cow’s Milk Protein Allergy (CMPA)

Most common food allergy – 2.5% of kids

<table>
<thead>
<tr>
<th></th>
<th>IgE mediated</th>
<th>NonIgE mediated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>Onset</td>
<td>6+ months</td>
<td>&lt; 6 months</td>
</tr>
<tr>
<td>Resolution</td>
<td>May persist</td>
<td>Almost always outgrown</td>
</tr>
<tr>
<td>Presentation</td>
<td>Urticaria, angioedema, periorbital edema, sneezing, wheezing, nvd</td>
<td>Chronic skin or GI sx E.g. proctitis, colitis, enteropathy, enterocolitis</td>
</tr>
<tr>
<td>Cross reactivity with soy</td>
<td>Less frequent 7 – 14%</td>
<td>High</td>
</tr>
<tr>
<td>Skin prick testing or IgE Abs</td>
<td>Useful for dx if positive</td>
<td>Not useful. Gold standard=double-blind placebo-controlled food challenge</td>
</tr>
</tbody>
</table>

Rourke
Introduction of Solids — general principles

• Exclusive breastfeeding X 6 mos vs. total duration

• Introduce solids no later than 6 months – iron sources first: cereals, meat, eggs, tofu

• 3 – 4 days between starting each new food

• No honey until 1 year of age
Case #: The picky eater

- 9 month old full term infant
- Birth weight – 3750 g
- Mom concerned because baby has started to refuse many foods eaten in the past.

What else do you want to know?
The picky eater – Why?

• Hypersensitivity to taste, texture, smell, temperature, appearance
• Oral-motor problem – past experience of gagging on food in question
• Negative feeding experience – control
• Absence of oral feedings during the appropriate developmental periods
• Medical problems interfering with normal feeding
The picky eater – Management

http://www.caringforkids.cps.ca/handouts/when_your_child_is_a_picky_eater

http://www.ucsfbenioffchildrens.org/education/picky_eaters/

- Long term approach
- Make mealtimes as pleasant as possible
  - E.g. realistic re mess!
- Make new foods consistently available but do not force
- Mix tiny amts of a new food with tolerated food
- Variations on what is eaten
2014 RBR: Injury prevention

- Transportation in motor vehicles
  - Rear-facing infant/child seats until 2 yrs of age

- Bike helmets – advocate for helmet legislation for all ages

- Falls – includes unstable furniture and screens (TV/computer)

- Pacifier use – evidence of protection against SIDS

- Firearm safety – removal and/or safe storage
2014 RBR: Behaviour and family issues

• Healthy sleep habits

• Family healthy active living/sedentary behaviour: expanded, includes media use

• Swaddling – benefits (^ sleep) vs adverse events if misapplied (^ temp, hip dysplasia); until age 2 mo due to potential ^SIDS

• Shaken baby syndrome ➔ abusive head trauma

• Prevention of child maltreatment: expanded. 2013 USPSTF statement
Case #: The crying baby

- 4 week old infant born at 38 wks gestn
- Birth weight – 3000 g
- Bottle fed infant
- Single mom
- Mom very anxious that baby is crying all the time and asks if it’s from the formula.
Crying in Newborns

- Most common problem facing new parents
- Babies only form of communication
- Babies cry frequently in a 24 hour period
- Babies cry more at night
- Most babies have at least one “fussy period” a day, often in early evening
- Babies cry less if their cries are responded to quickly

http://purplecrying.info/

NOTE: Always do a full careful history and physical exam as any condition causing pain will lead to excessive crying.
Colic

- Colic refers to intense crying, often high pitched, often occurs at the same time of the day
- Conventional defn: in first 3 months cries for >3 hr/day; > 3 days/wk
- Onset: several days to wks, peaks @ 4 – 6 wks, usually gone by 4 mos
- 10 – 30 % of infants

- Huge effect on families
Dietary modifications for colic


• Hard to study, publication bias, self limited condition
• Cow’s milk proteins can give colic sx in some infants & removal of cow’s milk from infants’ diets can v sx
  – Consider hypoallergenic formula – esp if severe colic, atopic features, family h/o atopy
  – Do not use soy formula
  – Low lactose milk formulas and fibre-enriched formulas – no evidence of effectiveness
  – Insufficient evidence for or against pre- or probiotics
• Breastfeeding mothers-consider 2 wk trial eliminating cow’s milk and avoiding potentially allergenic substances e.g. caffeine, chocolate, eggs, nuts
Colic and crying

http://www.caringforkids.cps.ca/handouts/colic_and_crying

- Steady, rhythmic movements
- Gentle, quiet handling, a darkened room, swaddling, avoidance of loud noises, crowds, bright lights, vigorous movements and other types of external stimulation
- Sucking on a pacifier, a finger, breast or bottle
- Parents need to be reassured that they are not the cause of their baby’s colic
- Time out, support from family and friends.
• Healthy sleep habits/routines: Normal sleep (quality and quantity for age) is associated with normal development

National Sleep Foundation:
http://www.sleepfoundation.org/article/sleep-topics/children-and-sleep

- Newborns: sleep 10.5-18h/d, irregular; observe for signs of sleepiness; put in crib when drowsy, not asleep; safe sleep.
- 3 – 11 mos: regular day and bedtime schedules; enjoyable bedtime routine; sleep friendly environment; fall asleep independently (“self-soother”).
- 1 – 3 yrs: regular day and bedtime schedules; bedtime routine; sleep friendly environment; set limits (consistent, communicated, enforced); security object.
- 3 – 5 yrs: regular consistent sleep schedule; relaxing bedtime routine ending in bedroom; same sleeping environment each night in a cool, quiet, dark room without a TV or computer.
# Physical Activity Guidelines

CPS position statement 2012


## TABLE 2

<table>
<thead>
<tr>
<th>Sedentary behaviour guidelines</th>
<th>Physical activity guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>For healthy growth and development:</td>
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</tr>
<tr>
<td>Caregivers should minimize the time infants (&lt;1 yr of age), toddlers (1-2 yrs) and preschoolers (3-4 yrs) spend being sedentary during waking hours, including prolonged sitting or being restrained (eg, in a stroller, high chair) for &gt;1 h at a time.</td>
<td>Infants (&lt;1 yr of age) should be physically active several times daily – particularly through interactive floor-based play.</td>
</tr>
<tr>
<td>For children &lt;2 years, screen time (eg, TV, computer, electronic games) is not recommended.</td>
<td>Toddlers (1-2 yrs) and preschoolers (3-4 yrs) should accumulate at least 180 min of physical activity at <em>any intensity</em> spread throughout the day, including:</td>
</tr>
<tr>
<td>For children 2-4 years, screen time should be limited to &lt;1 h/day; less is better.</td>
<td>* A variety of activities in different environments.</td>
</tr>
<tr>
<td></td>
<td>* Activities that develop movement skills.</td>
</tr>
<tr>
<td></td>
<td>* Progression toward at least 60 min of energetic play by 5 yrs of age.</td>
</tr>
<tr>
<td></td>
<td>More daily physical activity provides greater benefits.</td>
</tr>
</tbody>
</table>
2014 RBR: Environment items

• New section to highlight these items
• Sun exposure/sunscreen – SPF > 30 if > 6 mo age
• Insect repellents – 10% DEET: 6 - 24 mo OD; 2 - 12 yrs TID
• Risk factors for lead screening:
  – house older than 1978;
  – renovations or peeling/chipped paint;
  – sib or friend with lead poisoning
  – live near sources of lead contamination
  – household member with Pb job or hobby
  – refugee age 6 mo – 6 yr: within 3 mo of arrival and again in 3 – 6 mo

Is there a safe serum lead level?

• New websites
The Importance of Healthy Child Development

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Sensitive periods in early brain development
(Adapted from McCain MN, Mustard JF (1999). *Early Years Study: reversing the real brain drain.* )

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Binocular vision
Central auditory system

Habitual ways of responding
Sensitive periods in early brain development

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Central auditory system
Habitual ways of responding
Language

Emotional control

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The Influence of Environment

The influence of the early environment is long lasting...

...a child’s experience during the ‘early years’ affects their health, learning, and behaviour for their lifetime.

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Early Childhood Development

“Early in life, the environment talks to genes and the genes listen”
Dr. Clyde Hertzman

- OCFP Improving the Odds: Healthy Child Development
  

- Best start: http://www.beststart.org/

- CPS Early Childhood Development: First Years First
  
  http://www.cps.ca/first-debut
Factors that Influence Early Child Development

- Biological/Genetic Endowment
- Temperament
- Parenting Skills
- Physical Environment
- Significant Stressors
- Social Supports
- Abuse or Neglect
- Family Relationships
- Attachment

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Developmental Interactions

Failure to thrive

Abuse
Neglect
Deprivation

Attachment problems

Developmental Delays

Healthy Child Development: Improving the Odds (2007)

Adverse Childhood Experience

- Parent and family factors
- High risk infants
- Prevention of child maltreatment

CPS statement on shaken baby syndrome (abusive head trauma)

National Center on Shaken Baby Syndrome: http://www.dontshake.org/
Rates of Return to Human Development Investment Across all Ages

Return Per $ Invested

Pre-school Programs

School

Job Training

Carneiro, Heckman, Human Capital Policy, 2003
In www.ed.gov.nl.ca/edu/earlychildhood/literature_review.pdf
The Mismatch Between Opportunity and Investment

Brain's "Malleability"

Spending on Health, Education and Welfare

Age

0  3  10  70

Perry (1996), CIVITAS Initiative

Building a Healthy Tomorrow™
Case #5: What an independent child!

• 18 month boy
• Plays alone and not interested in other children
• Difficult to comfort when upset
• Has few words
• Hypersensitive to noise
• Picky eater re colours and textures
Building a Healthy TomorrowTM

Social/Emotional
- Child’s behaviour is usually manageable
- Interested in other children
- Usually easy to soothe
- Comes for comfort when distressed

Communication Skills
- Points to several different body parts
- Tries to get your attention to show you something
- Turns/responds when name is called
- Points to what he/she wants
- Looks for toy when asked or pointed in direction
- Imitates speech sounds and gestures
- Says 20 or more words (words do not have to be clear)
- Produces 4 consonants, (e.g., B D G H N W)

Motor Skills
- Walks alone
- Feeds self with spoon with little spilling

Adaptive Skills
- Removes hat/socks without help
- No parent/caregiver concerns

RBR 18 mo developmental milestones

AUTISM SPECTRUM DISORDER
Specific screening for ASD at 18–24 months should be performed on all children with any of the following: failed items on the social/emotional/communication skills inquiry, sibling with autism, or developmental concern by parent, caregiver, or physician.
Use the revised M-CHAT-R, and if abnormal, use the follow-up M-CHAT-R/F to reduce the false positive rate and avoid unnecessary referrals and parental concern. Electronic M-CHAT-R is available.
## M-CHAT-R™

Please answer these questions about your child. Keep in mind how your child **usually** behaves. If you have seen your child do the behavior a few times, but he or she does not usually do it, then please answer **no**. Please circle **yes** or **no** for every question. Thank you very much.

1. **If you point at something across the room, does your child look at it?**
   
   **Yes**  
   **No**

2. **Have you ever wondered if your child might be deaf?**
   
   **Yes**  
   **No**

3. **Does your child play pretend or make-believe?**
   **(For example, pretend to drink from an empty cup, pretend to talk on a phone, or pretend to feed a doll or stuffed animal)**

   **Yes**  
   **No**

4. **Does your child like climbing on things?**
   **(For example, furniture, playground equipment, or stairs)**

   **Yes**  
   **No**

5. **Does your child make unusual finger movements near his or her eyes?**
   **(For example, does your child wiggle his or her fingers close to his or her eyes?)**

   **Yes**  
   **No**

6. **Does your child point with one finger to ask for something or to get help?**
   **(For example, pointing to a snack or toy that is out of reach)**

   **Yes**  
   **No**

7. **Does your child point with one finger to show you something interesting?**
   **(For example, pointing to an airplane in the sky or a big truck in the road)**

   **Yes**  
   **No**

8. **Is your child interested in other children?**
   **(For example, does your child watch other children, smile at them, or go to them?)**

   **Yes**  
   **No**

9. **Does your child show you things by bringing them to you or holding them up for you to see — not to get help, but just to share?**
   **(For example, showing you a flower, a stuffed animal, or a toy truck)**

   **Yes**  
   **No**

10. **Does your child respond when you call his or her name?**
    **(For example, does he or she look up, talk or babble, or stop what he or she is doing when you call his or her name?)**

    **Yes**  
    **No**

11. **When you smile at your child, does he or she smile back at you?**

    **Yes**  
    **No**

12. **Does your child get upset by everyday noises?**
    **(For example, does your child scream or cry to noise such as a vacuum cleaner or loud music?)**

    **Yes**  
    **No**

13. **Does your child walk?**

    **Yes**  
    **No**

14. **Does your child look you in the eye when you are talking to him or her, playing with him or her, or dressing him or her?**

    **Yes**  
    **No**

15. **Does your child try to copy what you do?**
    **(For example, wave bye-bye, clap, or make a funny noise when you do)**

    **Yes**  
    **No**

16. **If you turn your head to look at something, does your child look around to see what you are looking at?**

    **Yes**  
    **No**

17. **Does your child try to get you to watch him or her?**
    **(For example, does your child look at you for praise, or say “look” or “watch me”?)**

    **Yes**  
    **No**

18. **Does your child understand when you tell him or her to do something?**
    **(For example, if you don’t point, can your child understand “put the book on the chair” or “bring me the blanket”?)**

    **Yes**  
    **No**

19. **If something new happens, does your child look at your face to see how you feel about it?**
    **(For example, if he or she hears a strange or funny noise, or sees a new toy, will he or she look at your face?)**

    **Yes**  
    **No**

20. **Does your child like movement activities?**
    **(For example, being swung or bounced on your knee)**

    **Yes**  
    **No**

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Initiatives/Research to best identify Developmental Delay (DD)

• Evidence for screening for DD: CTFPHC
• Ontario Enhanced 18 mo visit
• CPS Task Force on ECD
• Social determinants of health: incorporated into RBR modifications in some jurisdictions
• Nova Scotia initiatives
An appropriate age-specific physical examination is recommended at each visit. Evidence-based screening for specific conditions is highlighted.
2014 RBR: Physical examination

- Blood pressure
- Vision screening
  - Red reflex
  - Corneal light reflex/cover-uncover test and inquiry re strabismus
  - Visual acuity at age 3 – 5 yrs
- Hearing inquiry/screening
  - Audiology if concerns or high risk, regardless of (UNHS)
- Inspect tongue mobility for ankyloglossia
- Tonsil size/sleep-disordered breathing
- Testicles/male urinary stream/foreskin care
- Hip exam: until at least 1 yr, or walking; use age-appropriate exam
- Patency of anus at 1 wk
The following is an image of the Red reflex. The checkmark indicates a normal red reflex.
Normal infants can appear to have "crossed" eyes due to their normally wide epicanthal folds and flat nasal bridge resulting in less sclera visible medially than laterally. This is called pseudostrabismus.

The image shows pseudostrabismus resulting from a flat nasal bridge, wide epicanthal folds, and closely placed eyes. Note the normal symmetric placement of the corneal light reflex (Hirschberg test).
If each eye is thought of as a clock, the corneal light reflex should appear at the same "time" in each eye.

Findings during corneal light reflection.

1.) Normal alignment: the light reflections are in the same orientation on both corneas:
   
   1a) centered on both corneas when looking straight ahead;
   
   1b) at "3 o'clock" on both corneas when the eyes are looking to the baby's right.

2.) Left esotropia: the light reflection is outwardly displaced on the left cornea.

3.) Left exotropia: the light reflection is inwardly displaced on the left cornea.

4.) Left hypertropia: the light reflection is downwardly displaced on the left cornea.
Cover-uncover test

- The cover/uncover test can detect latent *strabismus* and can be performed when the examiner can hold the infant's attention and gaze - by approximately 6 months of age.

- With the child focusing on a light source, each eye is covered in turn, for 2 - 3 seconds, then quickly uncovered. The test is abnormal if the uncovered eye "wanders" OR if the covered eye moves when uncovered.

- For further illustration of the use of the position of the corneal light reflex and the cover/uncover test to detect strabismus, see: [https://www.youtube.com/watch?v=PRa7mPx2XVs](https://www.youtube.com/watch?v=PRa7mPx2XVs)
Case #6: Is there something wrong?

- 6 month old full term female infant born by C-section

- Mother called for appointment with concerns about baby’s hips after her most recent check by public health

“The public health nurse said I should get my baby’s hips checked because her thigh creases aren’t the same on both sides.”
Hip examination

After 3 months of age, limitation of abduction is the most reliable sign for DDH. Note the R hip has limited abduction (abnormal side).
Asymmetry of femur length

Galeazzi sign
2014 RBR: Investigations/Screening

Generally depends on risk profile of population.

Examples:
- Newborn screening as per province/territory
- Universal newborn hearing screening: good evidence.
- Anemia screening: for high risk groups
- Hemoglobinopathy screening: for high risk groups
- TB screening: for high risk groups
2014 RBR: Immunization

• Based on NACI (National Advisory Committee on Immunization)

• Direct link to Canadian Immunization Guide

• Improved chart format

• Avoiding pain during immunization – resources

• Update re meningococcal, HPV, MMR, and influenza vaccines
Case # 6: Ouch!

- 2 month infant, parents are both teachers
- Mom says she’s reluctant to have her baby immunized:
  “It’s not safe.”
  “Could cause autism.”
  “Will be painful.”
• Addressing parental reluctance
  – Ethical dilemma (best interest of child, public health)
  – Risk and benefit: risk with vs. without vaccine
  – Correct misconceptions
  – Discuss vaccines individually
  – Patient-centred: flexible schedule

  Working with vaccine-hesitant parents. PCH. May 2013.
  http://www.caringforkids.cps.ca/handouts/illnesses-index

Pain reduction: Sweet-tasting solutions, least painful vaccine brand, + topical anaesthetics

Taddio et al. Reducing pain during vaccine injections: clinical practice guideline.
  http://www.caringforkids.cps.ca/uploads/handout_images/3p_babiesto1yr_e.pdf