For 25 years, since it was first published in 1985, the Rourke Baby Record (RBR) has provided an evidence-based, structured approach to preventive pediatric care for children from birth to 5 years of age.1-7 Users of the RBR report that it is most helpful for assessing healthy child development, charting and recording well-baby and well-child visits, managing time effectively, addressing parent concerns, identifying health problems, and identifying high-risk situations, such as safety issues and family problems.8 A recent validation study found that family physicians using the RBR had significantly improved documentation of type of feeding (P=.023), discussion of safety issues (P<.001), assessment of development (P=.001), and overall comprehensiveness (P<.001) compared with nonusers.8 The RBR has been endorsed by the College of Family Physicians of Canada (CFPC) and the Canadian Paediatric Society (CPS) since 2000 and is available on their websites as well as at www.rourkebabyrecord.ca.

New information from the peer-reviewed literature has provided a broader knowledge base in many areas of preventive pediatric care. The objective of this paper is to provide a summary of what is new in the field of well-baby and well-child care by highlighting the updates to the most recent edition of the RBR, completed in 2009 (RBR’09).

Quality of evidence
Three typefaces are used in the RBR and in this article to indicate the strength

Abstract
OBJECTIVE To provide an overview of the 2009 edition of the Rourke Baby Record (RBR), which incorporates recent research in the literature relating to preventive health care for children aged 0 to 5 years.
QUALITY OF EVIDENCE Recommendations are identified as supported by good, fair, or consensus evidence, according to the classification of the Canadian Task Force on Preventive Health Care.
MAIN MESSAGE New information and recommendations are given for growth monitoring, nutrition, developmental surveillance, physical examination maneuvers, immunization schedules, and advice for parents. Anticipatory guidance updates relate to injury prevention, infant swaddling, literacy facilitation, nonparental child care, parenting skills programs, serum lead levels, over-the-counter cough and cold medications, pacifiers, antipyretics, insect repellents, and dental care and oral health. The 2009 RBR is available in English and French in both National and Ontario versions and is endorsed by the College of Family Physicians of Canada and the Canadian Paediatric Society.
CONCLUSION The RBR website (www.rourkebabyrecord.ca) provides a practical tool for well-baby and well-child care, including background information, current evidence and literature review appraisal, an interactive walk-through of the guides with links to further information and evidence, and additional practical resources.

Résumé
OBJECTIF Fournir un aperçu de l'édition 2009 du Relevé postnatal Rourke (RPR) qui inclut une revue de la littérature récente sur la recherche concernant les soins de santé préventifs pour enfants de 5 ans et moins.
QUALITÉ DES PREUVES Selon la classification du Groupe de travail canadien sur les soins de santé préventifs, les recommandations étaient appuyées par des données probantes bonnes, passables ou provenant de consensus.
PRINCIPAL MESSAGE Ce guide fournit de nouvelles informations et recommandations sur le suivi de la croissance, la nutrition, la surveillance du développement, les manœuvres de l'examen physique, le calendrier de vaccination et les conseils aux parents. Une mise à jour des conseils sur la prévention des blessures, l'emmaillotage du nourrisson, la facilitation de l’alphabétisation, les soins non parentaux, les programmes d'habilité parentale, les niveaux sériques de plomb, les médicaments pour la toux et le rhume en vente libre, les tétines, les antipyrétiques, les insectifuges, et la santé dentaire et buccale. Le RPR est disponible en anglais et en français, ce qui est en version nationale ou ontarienne, et il est approuvé par le Collège des médecins de famille du Canada et la Société canadienne de pédiatrie.
CONCLUSION Le site Web du RPR (www.rourkebabyrecord.ca) propose un outil pratique pour les soins des bébés et des enfants en santé, incluant l’information de base, une évaluation des données et de la littérature actuelle, un cheminement interactif à travers les guides, avec des liens vers d'autres renseignements et preuves, et des ressources pratiques additionnelles.
of the evidence used to guide our recommendations based on literature review, using the classification of the Canadian Task Force on Preventive Health Care (CTFPHC): good (bold type), fair (italic type), and consensus (plain type).9

An extensive literature review and critical appraisal of the evidence for items in the RBR was completed. The search was conducted using MEDLINE and PubMed search engines using key words relevant to each item. In addition to all relevant peer-reviewed articles found through searches, position statements pertaining to each item were reviewed from the Canadian Paediatric Society and the American Academy of Pediatrics. For each of the articles selected for review, the level of evidence (I to III) and, when possible (in most cases), a grade of the evidence used to guide our recommendations based on literature review, using the classification of the CTFPHC: good (bold type), fair (italic type), and consensus (plain type).9

For the first time, the annotated and critically appraised literature review for the RBR'09 is freely available on the RBR website (www.rourkebabyrecord.ca/ lit_review.html).

Main message

General. For continued ease of use, the RBR'09 has the same format as the 2006 edition. The RBR'09 consists of 4 guides, each containing 3 well-baby and well-child visits (Guide I: within 1 week, 2 weeks, and 1 month of age; Guide II: 2, 4, and 6 months; Guide III: 9, 12, and 15 months; Guide IV: 18 months, 2 to 3 years, and 4 to 5 years), an immunization table (Guide V), and accompanying resources and growth charts.

Paper hard copies are no longer being distributed commercially. Instead, the RBR'09 can be downloaded in English or French from the RBR website (www.rourkebabyrecord.ca) and from the CFPC and CPS websites.10,11

Growth monitoring. The World Health Organization (WHO) Child Growth Standards were released in 2006 based on the WHO Multicentre Growth Reference Study, a 6-year study of approximately 8500 children in 6 countries with optimal nutrition and health care followed longitudinally from birth to 5 years of age.12 A February 2010 Canadian collaborative statement from the Dietitians of Canada, the CFPC, the CPS, and Community Health Nurses of Canada recommends a change from use of the current Centers for Disease Control and Prevention 2000 growth references (which are based on American children and are not controlled for optimal nutrition and health care) to the WHO growth standards.13 Canadian growth charts using WHO growth data are now recommended in the RBR'09 for both breastfed and formula-fed infants, as they more closely represent optimal growth, are applicable for children of many ethnic backgrounds, and are more sensitive in detecting overweight and obese children. These charts and additional material to aid physicians and health care providers in this change can be found at www.dietitians.ca/growthcharts.

Growth measurement for premature infants less than 37 weeks’ gestation should be corrected for gestational age for up to 24 to 36 months.14

Nutrition. Parents often ask if their baby is drinking an appropriate amount of milk. As a result of popular demand, milk consumption range is now provided on the RBR'09. This range is based on consensus only and is provided as an approximate guide.

With the renewed interest in and research on vitamin D supplementation for both adults and children, watch for future changes in guidelines for both breastfed and formula-fed infants. Formula supplies only a portion of the currently recommended daily vitamin D intake (400 IU/d; 800 IU/d in northern communities) if less than 1000 mL (33 oz) of formula is consumed.

A gradual transition from the high-fat infant diet to a lower-fat diet begins after age 2 years as per Canada’s Food Guide, which includes recommendations for children as well as for adults.15 In following this guide, the RBR'09 now recommends 1% or 2% milk starting at 2 years of age.

Because of concerns about the potential adverse effects of phytoestrogens and the substantial risk of cross-allergy in children with non–immunoglobulin E cow’s milk protein allergy, soy-based formula is not recommended for routine use in term infants as an equivalent alternative to cow’s milk formula, or for cow’s milk protein allergy, and is contraindicated for preterm infants.16 Its use should be restricted to those infants with galactosemia or those who cannot consume dairy-based products for cultural or religious reasons.

Injury prevention. In Canada unintentional injuries are the leading cause of death in children and youth. The RBR'09 incorporates information and evidence updates directed at preventing injuries in infants and young children regarding transportation, water safety, choking, falls, and safe sleeping.

Transport Canada’s guidelines now incorporate height as well as age and weight in their car seat recommendations.17,18

More detailed recommendations for water safety include adult supervision, training for adults, 4-sided pool fencing, life jackets, swimming lessons, and boating safety to decrease the risk of drowning.19
Choking can be prevented not only by avoiding high-risk foods, but also by using safe toys, following minimum-age recommendations, and removing loose parts and broken toys.

Recommendations advising against trampoline use at home have been included in the RBR’09, as research has demonstrated a considerable risk of injuries from falls.20

**Safe sleeping** terminology has been clarified on the RBR’09. **Room-sharing** is protective against sudden infant death syndrome (SIDS) in contrast to bed-sharing, which has been shown to have a higher associated incidence of SIDS.21,22

**Behaviour and family issues.** New research has resulted in changes to the RBR’09 in terms of the risk of shaken baby syndrome, positive effects of proper swaddling, literacy facilitation, high-quality nonparental child care, and parenting skills programs.

Excessive crying can be caused by behavioural or physical factors or be within the upper limit of the normal spectrum. Evaluation of these etiologic factors and of the burden for parents is essential and raises awareness of the potential for shaken baby syndrome.23

Proper swaddling of the infant for the first 6 months of life can promote longer sleep periods but could be associated with adverse events (hyperthermia, SIDS, or development of hip dysplasia) if misapplied.24 A swaddled infant must always be placed in a supine position, with free movement of hips and legs and the head uncovered.

Encouraging parents to read to their children now appears on Guide II of the RBR’09, much earlier than in previous editions, owing to evidence of the importance of early interventions to facilitating literacy.25,26

The RBR’09 includes new information on high-quality child care, which is associated with improved outcomes for all children. Factors enhancing high-quality nonparental child care include the following: child care provider general education and specific training; group size and child-to-staff ratio; licensing and accreditation; infection control and injury prevention protocols; and emergency procedures. Well Beings, a publication freely available on the CPS website, provides a thorough manual for parents and child care providers.27

Referring parents of children at risk of or showing signs of behavioural or conduct problems to **structured parenting programs** has been shown to increase positive parenting, improve child compliance, and reduce general behaviour problems.28-29 Explore community resources to become aware of the most appropriate and locally available programs. Parenting skills programs with evidence of positive outcomes include The Incredible Years, Right from the Start, and COPE (Community Parent Education Program).28-30

**Other issues.** The RBR’09 includes new items on serum lead levels and on the use of over-the-counter cough and cold medications, as well as updates in information and evidence about pacifiers, antipyretics, insect repellents, and dental care and oral health statements.

Even for blood lead levels less than 10 μg/dL (the level previously believed to be safe), evidence now suggests an association, and perhaps partial causal relationship, with lower cognitive function in children.31,32

**Over-the-counter cough and cold medications** have been shown to have poor efficacy and to be associated with serious adverse effects and should not be used in children younger than 6 years of age.33,34

**Pacifier use** is associated with a lower incidence of SIDS and should not be discouraged in the first year of life after breastfeeding is well established, but use should be restricted in children with chronic or recurrent otitis media.35

Fever of 38°C or higher in an infant younger than 3 months of age needs urgent evaluation. Ibuprofen and acetaminophen are both effective antipyretics. Acetaminophen remains the medication of first choice for antipyresis for infants younger than 6 months of age; thereafter ibuprofen or acetaminophen can be used. Alternating acetaminophen with ibuprofen for fever control is not recommended in primary care settings, as this can encourage fever phobia, and the potential risks of medication error outweigh measurable clinical benefit.36,37

Recommendations for use of insect repellents are now age-specific: 10% DEET should be applied only once daily in children between 6 and 24 months of age and up to 3 times per day in children 2 to 12 years of age.38

**Fluoridated toothpaste** should be used twice per day with a minimum amount of water used to rinse the mouth after brushing. As excessive swallowing of toothpaste by young children can result in dental fluorosis, children younger than 6 years of age should be supervised during brushing and only use a small amount (eg, pea-sized portion) of toothpaste. Children younger than 3 years of age should have their teeth brushed by an adult using only a smear of toothpaste. Fluoride supplements are not recommended for children younger than 6 years of age unless the child is considered to be at high-risk of dental caries. To prevent early childhood caries, avoid sweetened liquids and constant sipping of milk or natural juices in both bottle and cup.39

**Development.** The RBR’09 underwent external reviews of levels of evidence for various developmental milestones, with subsequent revision of some items.

Assessment of developmental milestones for premature infants less than 37 weeks’ gestation should be corrected for gestational age for up to 24 to 36 months. Although recommendations for autism screening differ in the United States and Canada, the evidence points to specific screening for autism spectrum disorder at 18 to 24 months of age using the Modified Checklist for
Autism in Toddlers (M-CHAT) for all children with any of the following: a sibling with autism, failed items on the social-emotional–communication skills inquiry, or developmental concern by a parent, caregiver, or physician. If results of the M-CHAT are abnormal, use the M-CHAT follow-up interview to reduce the false-positive rate and avoid unnecessary referrals and parental concern. The M-CHAT tool and follow-up interview can be found at [www.mchatscreen.com](http://www.mchatscreen.com).

**Physical examination.** There is now good evidence for visual screening during well-baby and well-child examinations. Presence of the red reflex helps to rule out serious ocular diseases such as retinoblastoma and cataracts. The position of the corneal light reflex (at any age) and the cover-uncover test (in infants at least 6 months of age) should be checked, along with parental inquiry to detect strabismus. With the child focusing on a light source, the light reflex on the cornea should be symmetric. Each eye is then covered in turn, for 2 to 3 seconds, and then quickly uncovered. The test results are abnormal if the uncovered eye “wanders” or if the covered eye moves when uncovered.

Universal newborn hearing screening effectively identifies infants with congenital hearing loss and allows for early intervention. Any parental concerns about hearing acuity or language delay should prompt rapid referral for hearing assessment. Formal audiology testing should be performed in all high-risk infants, including those with normal findings on universal screening. Older children should be screened if it is clinically indicated.

There is insufficient evidence to recommend routine screening for developmental dysplasia of the hips, but examination of the hips should be included in the periodic health examination until at least 1 year of age or until the child can walk.

Sleep-related questions, including inquiry on snoring and sleep-disordered breathing, should be asked for all children 1 year of age and older. A positive response to the above questions with evidence of adenotonsillar hypertrophy and suspicion of sleep-disordered breathing warrants further assessment for obstructive sleep apnea.

The RBR’09 also includes clarification of the expected norms for fontanelle closure by 18 months of age.

**Immunization.** Immunization recommendations are continually evolving. Immunizations have been updated according to National Advisory Committee on Immunization (NACI) recommendations. Provincial immunization schedules and funding vary by province and should be consulted for the latest changes.

The RBR’09 Guide V immunization table now includes the HPV vaccine. Although this vaccine is recommended for girls older than the age range of the RBR (9 to 26 years), the RBR’09 Guide V vaccine charting table can be used to chart all vaccines, not just those from birth to age 5 years.

The recommended schedule for meningococcal conjugate vaccine (Men-C) has been updated. Monovalent vaccine to type C (Men-C-C) is indicated for all ages, and quadrivalent vaccine to types A, C, W, and Y (Men-C-ACWY) is indicated for those aged 2 years and older. Recommended vaccines, schedule, and number of doses of meningococcal vaccine depend on the age of the child and vary among provinces and territories. Schedules that begin at younger than 12 months of age require a booster dose given between 12 and 24 months of age. A Men-C-C or Men-C-ACWY booster dose should also be given at 12 years of age or during adolescence.

Evidence to recommend universal rotavirus vaccine was being considered by NACI and the CPS while this RBR update was in development. Rotavirus vaccine was recommended by both groups (NACI in July of 2010 and the CPS in October of 2010), and the next version of the RBR will reflect this.

The RBR’09 lists websites with additional information for parents on vaccinations.

**Other versions of the RBR’09.** Support for the RBR’09 update from the Province of Ontario included development of a specific Ontario version of the RBR’09, available in both English and French at [www.rourkebabyrecord.ca](http://www.rourkebabyrecord.ca). The Ontario RBR’09 differs from the National version on 2 items:

1. The 18-month visit development section of the Ontario RBR’09 includes the use of the Nipissing Developmental Screen, a parent questionnaire to assess the child’s development, which is freely available in Ontario ([www.ndds.ca](http://www.ndds.ca)).

Other locales have, with permission of the authors, adapted the RBR’09 to their specific circumstances.

A licensing agreement for adaptation of the RBR into electronic medical records has been developed and is proceeding in many computer applications.

**RBR website.** The RBR website ([www.rourkebabyrecord.ca](http://www.rourkebabyrecord.ca)) contains not only downloadable RBR’09 National and Ontario versions in English and French, but also details about the RBR’s development; intellectual property; an interactive walk-through, which provides a “guided tour” of the RBR with links to additional resources; an annotated literature review table with strengths of evidence based on the classification system of the CTFPHC; and much more.

**Conclusion**

The 2009 edition of the RBR continues the tradition of incorporating evidence-based maneuvers for assessing the growth, nutrition, development, and physical
examination of infants and children up to 5 years of age, as well as for providing anticipatory guidance and immunizations. The RBR website provides a practical resource for preventive pediatric health care. In this way, parents and health care providers can partner with one another with the goal of achieving optimal health for Canadian children.

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None declared

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References
