Greetings from Doris Grinspun
Executive Director
Registered Nurses’ Association of Ontario

It is with great excitement that the Registered Nurses’ Association of Ontario (RNAO) disseminates this nursing best practice guideline to you. Evidence-based practice supports the excellence in service that nurses are committed to deliver in our day-to-day practice.

We offer our endless thanks to the many institutions and individuals that are making RNAO’s vision for Nursing Best Practice Guidelines (NBPGs) a reality. The Government of Ontario recognized RNAO’s ability to lead this program and is providing multi-year funding. Tazim Virani – NBPG program director – with her fearless determination and skills, is moving the program forward faster and stronger than ever imagined. The nursing community, with its commitment and passion for excellence in nursing care, is providing the knowledge and countless hours essential to the creation and evaluation of each guideline. Employers have responded enthusiastically to the request for proposals (RFP), and are opening their organizations to pilot test the NBPGs.

Now comes the true test in this phenomenal journey: Will nurses utilize the guidelines in their day-to-day practice?

Successful uptake of these NBPGs requires a concerted effort of four groups: nurses themselves, other healthcare colleagues, nurse educators in academic and practice settings, and employers. After lodging these guidelines into their minds and hearts, knowledgeable and skillful nurses and nursing students need healthy and supportive work environments to help bring these guidelines to life.

We ask that you share this NBPG, and others, with members of the interdisciplinary team. There is much to learn from one another. Together, we can ensure that Ontarians receive the best possible care every time they come in contact with us. Let’s make them the real winners of this important effort!

RNAO will continue to work hard at developing and evaluating future guidelines. We wish you the best for a successful implementation!

Doris Grinspun, RN, MSN, PhD (cand), OOnt

Executive Director
Registered Nurses’ Association of Ontario
Foreward

Congratulations to the RNAO from Dr. Sheela Basrur, Chief Medical Officer of Health and Assistant Deputy Minister
Ministry of Health and Long-Term Care

It is with great pleasure that I offer my congratulations to the Registered Nurses Association of Ontario (RNAO) for their excellent work on this Nursing Best Practice Guideline (NBPG) for the Prevention of Childhood Obesity. Unhealthy weights are a major public health issue in Ontario as I identified in my 2004 Chief Medical Officer of Health Report, Healthy Weights, Healthy Lives. The RNAO has recognized that it is among our most vulnerable citizens, our children, that we face the greatest opportunities and challenges in addressing this epidemic.

The guideline for the Prevention of Childhood Obesity will support evidence-based practice and excellence in the services that nurses provide. Nurses will play an important role in addressing the healthy weights issue in their professional practice settings, as well as in their communities. We also need to build interdisciplinary collaboration – both within and beyond the health care sector – to have a significant impact on this important public health issue.

I applaud the RNAO for undertaking this timely project, and thank the members of the development panel for their work in developing this guideline. Together we share the challenge and commitment to create a healthy Ontario for all!

Dr. Sheela V. Basrur
Chief Medical Officer of Health and Assistant Deputy Minister
Ministry of Health and Long-Term Care
How to Use this Document

This nursing best practice guideline is a comprehensive document providing resources necessary for the support of evidence-based nursing practice. The document needs to be reviewed and applied, based on the specific needs of the organization or practice setting/environment, as well as the needs and wishes of the client. Guidelines should not be applied in a “cookbook” fashion but used as a tool to assist in decision making for individualized client care, as well as ensuring that appropriate structures and supports are in place to provide the best possible care.

Nurses, other healthcare professionals and administrators who are leading and facilitating practice changes will find this document valuable for the development of policies, procedures, protocols, educational programs, assessments and documentation tools. It is recommended that the nursing best practice guidelines be used as a resource tool. Nurses providing direct client care will benefit from reviewing the recommendations, the evidence in support of the recommendations and the process that was used to develop the guidelines. However, it is highly recommended that practice settings/environments adapt these guidelines in formats that would be user-friendly for daily use. This guideline has some suggested formats for such local adaptation and tailoring.

Organizations wishing to use the guideline may decide to do so in a number of ways:

- Assess current nursing and healthcare practices using the recommendations in the guideline.
- Identify recommendations that will address identified needs or gaps in services.
- Systematically develop a plan to implement the recommendations using associated tools and resources.

RNAO is interested in hearing how you have implemented this guideline. Please contact us to share your story. Implementation resources will be made available through the RNAO website at www.rnao.org/bestpractices to assist individuals and organizations to implement best practice guidelines.
Primary Prevention of Childhood Obesity

Program Team:

*Tazim Virani,* RN, MScN, PhD(candidate)
Program Director

*Stephanie Lappan-Gracon,* RN, MN
Program Coordinator – Champions Network

*Heather McConnell,* RN, BScN, MA(Ed)
Program Manager

*Josephine Santos,* RN, MN
Program Coordinator

*Jane M. Schouten,* RN, BScN, MBA
Program Coordinator

*Bonnie Russell,* BJ
Program Assistant

*Carrie Scott*
Administrative Assistant

*Julie Burris*
Administrative Assistant

*Keith Powell,* BA, AIT
Web Editor

Registered Nurses’ Association of Ontario
Nursing Best Practice Guidelines Program
111 Richmond Street West, Suite 1100
Toronto, Ontario M5H 2G4
Website: [www.rn ao.org/bestpractices](http://www.rn ao.org/bestpractices)
Primary Prevention of Childhood Obesity

Development Panel Members

Paula Robeson, RN, MScN
Team Leader
Knowledge Broker
Evaluating the Evidence on Knowledge Brokers Study
McMaster University
Hamilton, Ontario

Former position with and support from:
Ottawa Public Health, Ottawa, Ontario

Mary Lou Albanese, RN, BScN, MSA
Program Manager
Chronic Disease Prevention
Middlesex-London Health Unit
London, Ontario

Donna Ciliska, RN, PhD
Professor
School of Nursing
McMaster University and
Consultant Public Health Research,
Education and Development Program
Hamilton, Ontario

Veronica Fodor, RN
Staff Nurse
Family Health Centre
University Health Network
Toronto, Ontario

Marcia Frank, RN, MHSc, CDE
Clinical Nurse Specialist
Diabetes Program
The Hospital for Sick Children
Toronto, Ontario

Wendy Goodine, RN, BScN, PHCNP, RN(EC)
Nurse Practitioner
LAMP Community Health Centre
Toronto, Ontario

Liz Helden, RN, BSN, MEd
Nurse Coordinator
Pediatric Lipid Clinic, Chedoke McMaster Hospital
Hamilton, Ontario

Karen Hourtovenko, RN, BScN, CCNP, PHCNP, RN(EC)
Nurse Practitioner
Riverside Cardiac Clinic
Sudbury, Ontario

Stephanie Lappan-Gracon, RN, MN
Program Staff, Facilitator
Nursing Best Practice Guidelines Program
Registered Nurses’ Association of Ontario
Toronto, Ontario

Colette Larocque, RN, BScN
Public Health Nurse
School Health Team
Kingston & Frontenac Health Unit
Kingston, Ontario

Mary-Jo Makarchuk, MSc, MHSc, RD
Public Health Nutritionist
Toronto Public Health
Toronto, Ontario

Katherine Morrison, MD, FRCPC
Department of Pediatrics & Population Health
Research Institute
McMaster University
Hamilton, Ontario

Sylvia Ralphs-Thibodeau, RN, BA (community health), MSc(C)
University of Ottawa
Ottawa, Ontario

Lorraine Watson, RN, PhD
Professor
School of Nursing
University of Calgary
Calgary, Alberta

Declarations of interest and confidentiality were made by all members of the guideline development panel. Further details are available from the Registered Nurses’ Association of Ontario.
Acknowledgement

Stakeholders representing diverse perspectives were solicited for their feedback and the Registered Nurses’ Association of Ontario wishes to acknowledge the following for their contribution in reviewing this Nursing Best Practice Guideline:

- Sherri Adams, RN, MScN, CPNP: Clinical Nurse Specialist/Nurse Practitioner Pediatric Medicine, The Hospital for Sick Children, Toronto, Ontario
- Andy Anderson, PhD: Associate Professor, Ontario Institute for Studies in Education, University of Toronto, Toronto, Ontario
- Karen Balko, BAA, RD: Paediatric Dietitian, North York General Hospital, North York, Ontario
- Carole Beauvais, RN, BScN, MSc: Director, Pediatric Diabetes Services – Ontario, Northern Diabetes Health Network, Burlington, Ontario
- Karen Beckerman, RN, MSc(A): Physical Activity Promotion Coordinator, Toronto Public Health, Toronto, Ontario
- Joanne Beyers, MA, RD: Community Health & Nutrition Specialist, Sudbury District Health Unit – Public Health Research Education Development Program, Sudbury, Ontario
- Catherine Birken, MD, FRCPC: Academic General Paediatrician, The Hospital For Sick Children, Toronto, Ontario
- Marilyn Booth, RN, BA, MHSc: Executive Director, Ontario Children’s Health Network, Toronto, Ontario
- Elizabeth Bowman, RN, BScN: Staff Nurse, Resource Nurse, St. Joseph’s Healthcare – Charlton Site, Hamilton, Ontario
- Arlette Brobyn, RN, BScN: Manager, Chronic Disease and Injury Prevention, Region of Peel – Public Health, Brampton, Ontario
- Marg Creen, RN, BScN, COHN(C), COHN-S, CDMP: Disability Management Consultant, Manulife Financial, Toronto, Ontario
- Kimberly L. Deroo, RN, BScN, MN: Discharge Planning/SCAN Program, The Hospital for Sick Children, Toronto, Ontario
- Erica DiRuggiero, MHSc, RD: Assistant Director, Canadian Institutes of Health Research – Institute of Population & Public Health, Toronto, Ontario; Senior Volunteer, Canadian Cancer Society – Ontario Division
- Susan Evers, PhD, RD: Professor, University of Guelph, Guelph, Ontario
- Jill Hamilton, MD, FRCPC: Paediatric Endocrinologist, The Hospital for Sick Children, Toronto, Ontario
- Colleen Hanna, RN, BScN: Staff Educator, St. Joseph’s Healthcare, Hamilton, Ontario
- Mary Hastings, RN, BScN: Educator/Acting Manager, St. Joseph’s Healthcare, Hamilton, Ontario
- Cynthia Hitsman, RN, BScN: Director, Business Development, Victorian Order of Nurses, Ottawa, Ontario
- Peter Katzmarzyk, PhD: Associate Professor, Queen’s University, Kingston, Ontario
- Shiriki Kumanyika, PhD, RD, MPH: Professor of Epidemiology, Associate Dean for Health Promotion and Disease Prevention, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania, USA
Primary Prevention of Childhood Obesity

Claire Leblanc, MD, FRCP(C)  Head, Rheumatology Service, Children’s Hospital of Eastern Ontario, Ottawa, Ontario
Dip Sport Medicine

Marian Landry, RN, BScN, MEd  Health Promoter, Regional Niagara Public Health Department, St. Catharines, Ontario

Colleen Logue, MHSC, RD  Manager, Nutrition Resource Centre, Ontario Public Health Association, Toronto, Ontario

Jane MacDonald, RN, BScN, MHSc  Primary Health Care Consultant, Canadian Nurses’ Association, Ottawa, Ontario

Gail McVey, PhD, Reg. Psychologist  Health Systems Research Scientist, The Hospital for Sick Children, Toronto, Ontario

Rena Mendelson, MS, DSc, RD  Professor of Nutrition, Ryerson University, Toronto, Ontario

Constance O’Connor, RN, BScN, MN/ACNP(C)  CNS-ACNP Intern, Liver Program, The Hospital for Sick Children, Toronto, Ontario

Michelle Ponti BSc, MD, FRCPC  Paediatrician, London – Middlesex Children’s Aid Society, London, Ontario

Cindy Pritchard, BScN, RN (EC)  Nurse Practitioner, The Youth Centre, Ajax, Ontario

Heather Quance, RN, BScN  Public Health Nurse, KFL&A Health Unit, Kingston, Ontario

Andrea Riekstins, RN, MN, ACNP  Clinical Nurse Specialist/Nurse Practitioner, The Hospital for Sick Children, Toronto, Ontario

Mary Jean Short, RN, BScN  Public Health Nurse, KFL&A Health Unit, Kingston, Ontario

Melissa Skinner, RN, BScN, MN(Can)  Acting CHS Director, The Hospital for Sick Children, Toronto, Ontario

Marlene Slepkov, RN, DPHN, BScN, CPMHN(C)  Nurse Manager, Victorian Order of Nurses, Thorold, Ontario; President, Community Health Nurses Initiatives Group, RNAO

Jane Anne Sullivan, BASc, RD  Paediatric Dietitian, Royal Victoria Hospital, Barrie, Ontario

Donna Tucker, RN, MScN  Project Director, Healthy Work Environments Best Practice Guidelines Project, RNAO, Toronto, Ontario

Robin Williams, MD, DPH, FRCPC  Medical Officer of Health, Regional Niagara Public Health, St. Catharines, Ontario
Primary Prevention of Childhood Obesity

Disclaimer
These best practice guidelines are related only to nursing practice and not intended to take into account fiscal efficiencies. These guidelines are not binding for nurses and their use should be flexible to accommodate client/family wishes and local circumstances. They neither constitute a liability or discharge from liability. While every effort has been made to ensure the accuracy of the contents at the time of publication, neither the authors nor the Registered Nurses’ Association of Ontario (RNAO) give any guarantee as to the accuracy of the information contained in them nor accept any liability, with respect to loss, damage, injury or expense arising from any such errors or omission in the contents of this work. Any reference throughout the document to specific pharmaceutical products as examples does not imply endorsement of any of these products.

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**Summary of Recommendations**

The following recommendations are organized according to the ecological framework described on page 20, and are not presented in order of priority. Rather, general recommendations are followed by those directed at the community, school, family, and individual, in that order. Practice recommendations are then followed by recommendations related to nursing education and organizational/policy development.

There is limited evidence on the effectiveness of obesity prevention interventions in children. Despite the lack of evidence around obesity prevention, the development panel reviewed high quality evidence around behavioural change in relation to healthy eating and physical activity as a starting point for the prevention of childhood obesity. Through consensus, the development panel reached the decision to identify specific recommendations with an embedded behavioural change component as high level of evidence (e.g., Ia-IIb). Where the level of evidence in the table below is identified as high level (e.g., Ia-IIb), this indicates that a high level exists for behavioural change, however the extrapolation for obesity prevention in children is consensus-based (e.g., Level IV).

<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>LEVEL OF EVIDENCE</th>
</tr>
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<tbody>
<tr>
<td><strong>Practice Recommendations</strong></td>
<td></td>
</tr>
<tr>
<td>1.0 Nurses promote healthy eating and physical activity throughout the lifecycle beginning at an early age.</td>
<td>IV</td>
</tr>
</tbody>
</table>
| 2.0 Nurses advocate for healthy public policies that include:  
  ■ Monitoring and surveillance data at the population level regarding (Level IV):  
    ● Nutrition;  
    ● Physical activity; and  
    ● Measures of adiposity including obesity and overweight status.  
  ■ Healthy community design. (Level IV)  
  ■ Health promoting school policies. (Level IIb)  
  ■ Legislation to limit advertising directed towards children. (Level IIb)  
  ■ Community-wide campaigns. (Level Ia) | Ia – IV |
| 3.0 Nurses promote healthy eating and physical activity at population, community, family, and individual levels by planning, implementing, and evaluating interventions that are:  
  ■ Tailored to the strengths and needs of the client and are (Level IV):  
    ● Developmentally appropriate;  
    ● Culturally and linguistically relevant; and  
    ● Gender-specific.  
  ■ Affordable and accessible. (Level IV)  
  ■ Focused on behaviour change. (Level IIb) | IIb – IV |
| 4.0 Nurses maximize the effectiveness of their healthy lifestyle interventions through interactions that are of sufficient intensity and duration to effect behaviour change. | Ia |
| 5.0 Nurses support exclusive breastfeeding for infants until six months of age. | III |

*See page 13 for details regarding “Interpretation of Evidence”.*
<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>LEVEL OF EVIDENCE</th>
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<tbody>
<tr>
<td>6.0 Nurses promote healthy eating using <em>Canada’s Food Guide to Healthy Eating</em> and focus on:</td>
<td>IV</td>
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<tr>
<td>■ Using age-appropriate portion sizes;</td>
<td></td>
</tr>
<tr>
<td>■ Emphasizing fruits and vegetables;</td>
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</tr>
<tr>
<td>■ Limiting sugar containing beverages (e.g., soft drinks and fruit juices);</td>
<td></td>
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<tr>
<td>■ Limiting consumption of energy-dense snack foods high in sugar and fat (e.g. potato chips, french fries, candy); and</td>
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<tr>
<td>■ Breakfast consumption.</td>
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<tr>
<td>7.0 Nurses promote healthy eating patterns using interventions with one or more of the following components:</td>
<td>la</td>
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<tr>
<td>■ Small group activities;</td>
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<tr>
<td>■ Goal setting;</td>
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<tr>
<td>■ Social support;</td>
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<tr>
<td>■ Interactive food-related activities (e.g., cooking, taste-testing); and</td>
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<tr>
<td>■ Family participation.</td>
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<tr>
<td>8.0 Nurses promote increased physical activity based on <em>Canada’s Physical Activity Guides for Children and Youth</em> using interventions with one or more of the following components:</td>
<td>lb-IV</td>
</tr>
<tr>
<td>■ Behaviour modification. (Level Ib)</td>
<td></td>
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<tr>
<td>■ Leisure activity of low intensity that is gradually increased to recommended levels. (Level IV)</td>
<td></td>
</tr>
<tr>
<td>■ Sustained, repeated interventions. (Level IV)</td>
<td></td>
</tr>
<tr>
<td>9.0 Nurses promote a decrease in sedentary activities with emphasis on reducing the amount of time clients spend watching TV, playing video games, and engaging in recreational computer use.</td>
<td>lb</td>
</tr>
<tr>
<td>10.0 Nurses work with school communities to implement school-based strategies for the prevention of obesity using a multi-component approach including:</td>
<td>la</td>
</tr>
<tr>
<td>■ Integrating healthy lifestyle messages into curricula;</td>
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<tr>
<td>■ Advocating for and supporting the implementation of quality daily physical education taught by specialist physical education teachers;</td>
<td></td>
</tr>
<tr>
<td>■ Advocating for and supporting the implementation of quality daily physical activity (including vigorous physical activity);</td>
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<tr>
<td>■ Using youth driven approaches with an information and advocacy component.</td>
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<tr>
<td>■ Offering healthy choices in cafeterias and vending machines;</td>
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<tr>
<td>■ Increasing physical activity opportunities at recess and during lunch breaks; and</td>
<td></td>
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<tr>
<td>■ Forming community partnerships and coalitions.</td>
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<tr>
<td>11.0 Nurses support a family-centred approach to promote healthy eating and physical activity.</td>
<td>III</td>
</tr>
<tr>
<td>12.0 Nurses assess physical growth and development of children and adolescents which includes:</td>
<td>IV</td>
</tr>
<tr>
<td>■ Discussing and documenting basic dietary patterns;</td>
<td></td>
</tr>
<tr>
<td>■ Discussing and documenting physical activity patterns including sedentary activity (e.g., television and computer time);</td>
<td></td>
</tr>
<tr>
<td>■ Identifying individual and family risk factors for childhood obesity;</td>
<td></td>
</tr>
<tr>
<td>■ Accurately measuring and recording height and weight;</td>
<td></td>
</tr>
<tr>
<td>■ Calculating Body Mass Index (BMI) for children two years of age and older;</td>
<td></td>
</tr>
<tr>
<td>■ Plotting BMI for age on appropriate U.S. Centre for Disease Control paediatric growth charts as recommended by Health Canada; and</td>
<td></td>
</tr>
<tr>
<td>■ Monitoring changes in BMI, dietary and physical activity patterns over time and noting important variations.</td>
<td></td>
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</tbody>
</table>
### RECOMMENDATION

#### 13.0
Nurses assist clients to access community resources and opportunities to engage in healthy eating and physical activity through:
- Direct referral of clients to community resources;
- Dissemination of information about available community resources; and
- Promotion of low and no cost physical activity options (e.g., hiking, walking, active commuting and subsidized programs).

*Level of Evidence: IIa*

#### 14.0
Nurses are aware of, refer to, and collaborate with appropriate allied health providers based on findings from nursing assessment.

*Level of Evidence: IV*

#### Education Recommendation

#### 15.0
Nursing academic and continuing education programs incorporate the following into their curricula:
- Childhood obesity, associated health risks, risk and protective factors (including the content of the RNAO nursing best practice guideline *Primary Prevention of Childhood Obesity*).
- Population health promotion and prevention principles and interventions aimed at:
  - Health promoting behaviours such as physical activity and healthy eating;
  - Obesity prevention;
  - Chronic disease prevention; and
  - Determinants of health (particularly as they impact the risks for obesity and chronic diseases).
- Healthy public policy (HPP) and the nurse’s role in HPP development.
- Research skills, including:
  - Literature searches and reviews;
  - Critical appraisal and analysis;
  - Program evaluation; and
  - Dissemination of research findings to varied audiences.
- Individual/family focused interventions (including support and counseling) aimed at promoting healthy behaviours and behaviour change.

*Level of Evidence: IV*

#### Organization & Policy Recommendations

#### 16.0
Nurses advocate for, and participate in, high quality research addressing identified knowledge gaps in the prevention of childhood obesity.

*Level of Evidence: IV*

#### 17.0
Nurses advocate for organizations to develop a plan for implementation that is evidence-based and includes:
- An assessment of organizational readiness and barriers to education;
- Involvement of all stakeholders (whether in a direct or indirect supportive function) who will contribute to the implementation process;
- Dedication of a qualified individual to provide the support needed for the education and implementation process;
- Ongoing opportunities for discussion and education to reinforce the importance of best practices;
- Opportunities for reflection on personal and organizational experience in implementing evidence-based guidelines; and
- An organizational culture that is supportive of evidence-based practice.

*Evaluation of effectiveness.*

In this regard, RNAO (through a panel of nurses, researchers and administrators) has developed the *Toolkit: Implementation of Clinical Practice Guidelines* based on available evidence, theoretical perspectives and consensus. The Toolkit is recommended for guiding the implementation of the RNAO guideline *Primary Prevention of Childhood Obesity.*
Interpretation of Evidence

Levels of Evidence

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>Evidence obtained from meta-analysis or systematic review of randomized controlled trials.</td>
</tr>
<tr>
<td>Ib</td>
<td>Evidence obtained from at least one well-designed randomized controlled trial.</td>
</tr>
<tr>
<td>Ila</td>
<td>Evidence obtained from at least one well-designed trial without randomization.</td>
</tr>
<tr>
<td>Iib</td>
<td>Evidence obtained from at least one other type of well-designed quasi-experimental study, without randomization.</td>
</tr>
<tr>
<td>III</td>
<td>Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.</td>
</tr>
<tr>
<td>IV</td>
<td>Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.</td>
</tr>
</tbody>
</table>

Responsibility for Development

The Registered Nurses' Association of Ontario (RNAO), with funding from the Government of Ontario, has embarked on a multi-year project of nursing best practice guideline (BPG) development, pilot implementation, evaluation, and dissemination. This guideline on the prevention of childhood obesity was developed in the fifth cycle of the BPG program by an interdisciplinary panel convened by the RNAO. The panel conducted its work independent of any bias or influence from the Government of Ontario.
Purpose & Scope

Best practice guidelines (BPG) are systematically developed statements to assist practitioners’ and clients’ decisions about appropriate health care (Field & Lohr, 1990).

This best practice guideline focuses on the primary prevention* of obesity in children from birth to age 18 years. Treatment of obesity is not within the scope of this guideline. The reader may find that many of the recommendations provided in this guideline are applicable in the treatment of childhood obesity. However, the level of evidence supporting each recommendation applies to prevention efforts with non-obese, non-overweight children, unless otherwise stated.

The purpose of this guideline is to provide direction for nurses who work with children and families across diverse practice settings and at population, family*, and/or individual levels. Practice Recommendations* relate to population, family, and child/adolescent focused strategies to prevent obesity, promote healthy eating, and increase physical activity. Education Recommendations* are identified to encourage nursing competency in primary prevention and health promotion. Organization and Policy Recommendations* have been developed to address the importance of a supportive practice environment as an enabling factor for providing high quality evidence-based nursing care, which includes ongoing evaluation of guideline implementation.

Nurses using this guideline are expected to:
  ■ Participate in nursing activities for which they have appropriate and adequate knowledge, skills, and experience and for which they are sufficiently educated; and
  ■ Seek appropriate consultation in instances where the client’s* care needs surpass their individual or professional ability to act independently.

Effective planning, delivery, and evaluation of health services depends on a coordinated interdisciplinary* approach where there is effective communication between health professionals and clients, and where the personal preferences and unique needs of individual clients are considered. The prevention of childhood obesity requires action by nurses (and other health professionals), across multiple practice settings and sectors, at many levels (population, family, individual), using a variety of interventions. Recognizing the complexity of the issue, the variety of nursing clients, and the breadth of potential interventions, this guideline bases its recommendations on an ecological framework*. See Figure 1 on page 20.

* Definitions of terms italicized and marked with * are found in the Glossary of Terms (Appendix A).
Development Process

In January 2004, an interdisciplinary panel with expertise in child and family-based clinical practice, health promotion*, population health, education, and research from institutional, community, and academic settings was convened under the auspices of the RNAO. At the outset, the panel established the scope of the guideline through a process of discussion and consensus. Specifically, this panel chose to focus on the primary prevention of childhood obesity from population, community, and child/family perspectives.

To assist in the development phase of the project, an initial search of the literature using broad search terms was conducted. A search for existing practice guidelines related to obesity prevention in children was also undertaken. The details of this structured search are described in Appendix B. Existing practice guidelines were screened according to the following criteria:

- Current – dated no earlier than 1997;
- Relevant – pertaining specifically to the primary prevention of childhood obesity and the scope identified by the panel for this best practice guideline;
- Evidence-based – Developed with rigour using systematic methods to evaluate methodology;
- Available and accessible for retrieval; and
- Published in English.

The following five guidelines were identified and critically appraised using the Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument (Agree Collaboration, 2001):


Primary Prevention of Childhood Obesity

The results of the literature search and review were used to inform the background of this document and the methodology for guideline development. After careful review, the panel found that the published guidelines that focused on primary prevention of childhood obesity were limited. They decided to examine existing systematic reviews of the literature on primary prevention intervention strategies for childhood obesity. The panel members searched for high quality *systematic reviews* on the prevention of childhood obesity and the promotion of healthy eating and physical activity. Panel members evaluated the reviews using the Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for systematic reviews *(Appendix C)* with direction from one of the panel members who had extensive experience in undertaking systematic literature reviews. Reviews that were judged as moderate or high quality were utilized to develop initial recommendations and supporting discussion of evidence. The list of systematic reviews initially critiqued are found in *Appendix D*. Panel members developed recommendations based on available evidence and came to a *consensus* on a draft guideline.

This initial draft was critiqued by two independent reviewers prior to publication using the *AGREE instrument* *(AGREE Collaboration, 2001)*. No revisions resulted from this review. The initial draft was shared with a group of external stakeholders. An acknowledgement of these reviewers is provided at the front of this document. External stakeholders were provided with specific questions for comments, as well as the opportunity to give overall feedback and general impressions. The results were compiled and reviewed by the development panel. Discussion and consensus resulted in revision to the draft document prior to publication.

**Background Context**

Several prominent reports have identified obesity as a growing public health issue *(Government of Ontario, 2004; Institute of Medicine [IOM], 2004)*. *Obesity* has reached epidemic proportions both locally and globally *(Government of Ontario, 2004; IOM, 2004; World Health Organization [WHO], 2003)*. The World Health Organization (WHO) estimates that globally over one billion adults are *overweight* and at least 300 million of those individuals are clinically obese. In Ontario, almost 50% of adults are overweight or obese *(Canadian Population Health Initiative [CPHI], 2004)*. In addition, 15-20% of Ontario’s youth (12 to 15 years) are overweight or obese, according to the Canadian Community Health Survey (2000). From the years 1985-2000, over 57,000 deaths in Canada were attributed to overweight and obesity *(Katzmarzyk & Ardern, 2004)*.

There is strong evidence that, among Canadian children, the prevalence of overweight and obesity is rising rapidly *(Tremblay & Willms, 2000; Willms, Tremblay, & Katzmarzyk, 2003)*. Between 1981-1996, the prevalence of obesity among Canadian children (aged 7-13 years) tripled *(Tremblay & Willms, 2000)*. Yet, because data are limited and are based on self-reports of height and weight or parental reports, it is difficult to estimate the extent of the issue among Ontario’s children.
Nursing Best Practice Guideline

These rising rates are particularly striking in light of the immediate and long term health consequences associated with childhood obesity (Buschbacker & Barlow, 2002; Health Canada, 2003; IOM, 2004; Jonides, Lobstein, Baur, & Uauy, 2004), which are summarized in Table 1.

**Table 1: Physical, Social, and Emotional Health Consequences of Obesity in Childhood and Adolescence**

| Physical | Metabolic | Glucose intolerance and insulin resistance  
| Type 2 Diabetes  
| Dyslipidemia  
| Polycystic Ovary Disease  
| Menstrual abnormalities |
| Cardiovascular | Hypertension  
| Left Ventricular Hypertrophy  
| Early atherosclerosis |
| Pulmonary | Obstructive Sleep Apnea  
| Asthma |
| Gastroenterological | Non-Alcoholic Steato-Hepatitis (NASH)  
| Cholelithiasis |
| Musculoskeletal | Impaired balance  
| Joint pain  
| Back pain  
| Slipped Capital Femoral Epiphyses  
| Tibia vara |
| Emotional | Low self-esteem  
| Depression |
| Social | Increased stigmatization  
| Teasing and other forms of bullying  
| Social marginalization  
| Discrimination  
| Risk behaviours (e.g., smoking, alcohol and other drug use) |

In a population-based sample of obese children (5-10 years) (Freedman, Dietz, Srinivasan, & Berenson, 1999), approximately 60% of those studied had at least one risk factor for cardiovascular disease (CVD). These risk factors included elevated total cholesterol, triglycerides, insulin, and blood pressure. Further, 25% had two or more such risk factors. Obesity is associated with metabolic syndrome, osteoarthritis, certain cancers, Type 2 diabetes, and cardiovascular disease (IOM, 2004). The increasing prevalence of Type 2 diabetes in adolescents, a disorder formerly thought only to occur in adults is of particular concern. Obesity and overweight in adolescence is associated with increased risk of all cause mortality, cardiovascular mortality and other broad health impacts 55 years later (Must, Jacques, Dallal, Bajema, & Dietz, 1992; Must & Strauss, 1999). Overweight and obese children are at greater risk of becoming overweight adults especially when obesity is present in adolescence (Dietz & Gortmaker, 2001; Freedman, Khan, Dietz, Srinivasan, & Berenson, 2001; Story, 1999).
Primary Prevention of Childhood Obesity

Obesity in childhood and adolescence may also have adverse effects on social, academic, and economic outcomes in childhood and adulthood (Gortmaker, Must, Perrin, Sobol, & Dietz, 1993; IOM, 2004; Must et al., 1992). Obese and overweight children and youth are at risk of developing serious social and emotional health consequences related to their weight status. Today’s society often stigmatizes people with obesity. This stigmatization, in turn, can lead to shame, self-blame, and low self-esteem that may negatively affect academic and social functioning now and into adulthood (IOM, 2004, Lobstein et al., 2004).

Moreover, costs associated with the treatment of obesity and related morbidity place an increasing burden on our health care system. A meta-analysis by Katzmarzyk and Janssen (2004) used a prevalence-based approach to estimate the economic costs of physical inactivity and obesity in Canada. These authors found the economic burden of obesity in 2001 to be $4.3 billion of which $1.6 billion was attributed to direct costs and $2.7 billion to indirect expenditures. The consequences of physical inactivity alone accounted for $5.3 billion or 2.6% of total health care costs in Canada in 2001.

Risk Factors

The rising rates of obesity during childhood are influenced by various elements of what has been described as an obesogenic* environment (one that promotes sedentary or less active lifestyles and the over-consumption of food in general, and a greater consumption of high-fat high-calorie foods, in particular). Some of these elements include (Lobstein et al., 2004; Kumanyika, Jeffery, Morabia, Ritenbaugh, & Antipatis, 2002; Young & Nestle, 2002):

- More food marketing and advertising;
- Bigger serving sizes (i.e., “super sizing”);
- Increased restaurant-based and “fast” food consumption (associated with higher fat and calorie content, lower nutrient value, larger portion sizes, limited nutritional information) related to time constraints experienced by today’s families.
- Greater consumption of energy dense foods that are high in sugar and fat, such as potato chips, french fries and candy;
- Increased amounts of time children spend engaged in sedentary behaviour (e.g., television viewing, computer time, video games);
- Community designs which promote the use of cars rather than walking and cycling;
- Decreased participation in active transportation to and from school (and other community venues);
- Decreased opportunities for participation in physical education classes in schools (resulting from declining tax support for public education and competing academic priorities); and
- Reduced recess and lunch periods and thereby a reduction in time available for physical activity and healthy eating.

Numerous studies confirm that when parents are obese, the risk of persistent obesity in their children increases three-fold (Fuentes, Notkola, Shemeikka, Tuomilehto & Nissinen, 2002; Mo-suwan, Tongkumchum & Puertapiboon, 2000; Whitaker, Wright, Pepe, Seidal & Dietz, 1997). Monogenic (single gene) causes of obesity are being described with increasing frequency; this familial link to obesity however, continues to represent only a minority of children with obesity (O’Rahilly, Farooqi, Yeo, & Challis, 2003). From a prevention perspective, it is more important to note that lifestyle patterns relating to nutrition and physical activity develop within the context of the family. Dietary energy and fat intake (Oliveria, Ellison, Moore, Gillman, Garrahrhe & Singer, 1992) and physical activity profiles (Moore et al., 1991; Perusse, Tremblay & Leblanc, 1988) in children closely reflect those of
their parents. Physical activity in pre-school children can be related to parental BMI (Finn, Johannsen, & Specker, 2002). Reduced physical activity and increased sedentary behaviours in childhood are associated with higher levels of overweight and obesity (Tremblay & Willms, 2003).

Rates of overweight and obesity also vary by family income. In 1998-1999, for children aged 2-11 years, those from low-income families were 1.5 times more likely to be obese when compared to their more affluent peers (FPT Advisory Committee on Population Health Statistical Report on the Health of Canadians, 1999; Statistics Canada, 2002a). The importance of a number of additional risk factors including gestational diabetes (Pettitt, Aleck, Baird, Carrhaer, Bennett, & Knowler, 1998; Pettitt, Bennett, Saad, Charles, Nelson, & Knowler, 1991; von Kries, Kimmerle, Schmidt, Rachmeister, Bohm, & Wolf, 1997), and maternal smoking during pregnancy, (von Kries, Toscheke, Koletzko, & Slikker, 2002; Wideroe, Vik, Jacobsen, & Bakketeig, 2003) reduced fetal growth (Ravelli, Der Meulen, Osmond, Barker, & Bleker, 1999), and bottle-feeding during infancy (Gillman, Rifas-Shiman, Camargo, Berkey, Frazier, Rockett, et al., 2001; Kramer, 1981; Parsons, Power, & Manor, 2003; von Kries, Koletzko, Sauerwald, von Mutius, Barnert, Grunert, et al., 1999) on the development of overweight in childhood remains to be fully elucidated.

Knowing the risk factors for the development of obesity in childhood and adolescence can help guide early identification and targeted prevention efforts. These risk factors may be present at population, community, family, and individual levels.

**Ecological Framework**

At its simplest, obesity is the result of an *energy imbalance*. Obesity and overweight occur when energy intake (calories consumed in food and beverages) exceeds energy expenditure (calories burned off in physical activity). While it may appear that the solution to obesity prevention amounts to a simple rebalancing of the energy equation at the individual level, there is a much more complex interaction between individuals and their environments that must be examined at the population level.

Much of the research to date that examines the determinants of childhood obesity focuses on the individual. Yet the complexity of factors that influence the development of childhood overweight and obesity at individual, family, and population levels, suggest that effective prevention efforts will require the development of interventions that affect nutritional intake and physical activity at each of these levels. Therefore, prevention strategies recommended in this guideline are based on an *ecological framework*, which considers the child and family at the centre of a spiral which extends to include the school, community, and broader corporate and governmental influence (see Figure 1). A spiral was chosen to demonstrate the interactive, multi-directional influences at every level, which ultimately “spiral down” to influence the family and child. In accordance with this framework, the term *client* will be used and can refer to an individual, family, community, or population with which a nurse or group of nurses work in these prevention efforts.
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Figure 1. Ecological framework for the prevention of childhood obesity

Developed by the RNAO development panel
References: Kumanyika et al. 2002; Lobstein et al., 2004.

Limitations of Evidence
Childhood obesity is an emerging issue for which knowledge regarding prevention is currently in development. The review of existing practice guidelines and published literature related to the prevention of obesity in childhood revealed a limited number of high quality evidence to guide the development of best practice recommendations. Specific examples of limitations of evidence are cited below.

This guideline addresses the primary prevention of obesity in childhood; that is, efforts aimed at preventing non-overweight children from becoming obese. Much of the literature however, describes school-based interventions that were directed at both overweight and healthy weight children. Definitions of ‘overweight’ and ‘obese’ vary between the United States and Canada and in different research studies; this complicates data analysis. Further, systematic reviews published to date have noted several methodological limitations impacting the quality of evidence (Campbell, Waters, O’Meara, Kelly & Summerbell, 2002). These limitations include:

- Limited population level data;
- Small sample size;
- Lack of long term outcomes;
- Shortage of studies related to socioeconomic, gender, and cultural influences;
- Varying outcome measures related to impact of interventions on obesity, physical activity and healthy eating;
- Limited evidence that is related to behaviour change rather than knowledge and attitude development;
Limited data related to the effectiveness of environmental changes including policies and legislation;
Limited program evaluation data;
Lack of explicit theoretical foundations;
Lack of evidence directly relating to nursing practice; and
Weak evidence base regarding the impact of health disparities on obesity.

Despite these limitations and the variations in study results, this guideline provides the best available evidence to date to guide nursing practice. In accordance with the RNAO's process for guideline review and update, this guideline will be updated every three years. The process for this review and update is outlined later in this document (see page 48). This guideline and accompanying recommendations provide a framework for nurses to begin to address the prevention of childhood obesity. This best practice guideline will be strengthened as new evidence becomes available.

Nursing Implications
Childhood obesity is associated with enormous health consequences and costs to society. Immediate action is required to slow or reverse this alarming trend. Programs directed at the treatment of children and adults with overweight and obesity have not been met with much success (Zhang & Wang, 2004). In order to have the greatest impact on the health and economic costs associated with obesity, more attention needs to be given to prevention strategies.

Nurses work in diverse health and community settings that provide numerous opportunities for health promotion and obesity prevention. They have a key role in collaborating with other health care providers, communities and governments to address this serious public health issue. Recommendations for nursing interventions, in accordance with the ecological framework, are provided to guide nurses in population, school, family, and individual levels of practice.
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Practice Recommendations

The following practice recommendations are organized according to the ecological framework previously described. Thus, general recommendations are followed by those directed at the community, school, family and individual levels, in that order. Practice recommendations are then followed by recommendations related to nursing education and organizational development.

This guideline presents recommendations and provides the corresponding levels of evidence. As indicated in the document, for some recommendations these levels of evidence relate directly to obesity prevention. For others, however, these levels relate to evidence on interventions aimed at behaviour change regarding physical activity and healthy eating. We believe that these behaviour changes will result in the reduction of obesity, however evidence to support this belief does not yet exist. When there exists a high level of evidence (Level I or II) for behaviour change related to physical activity and/or healthy eating, the panel has set the corresponding level of evidence for obesity prevention to be Level IV.

In very few cases, the evidence relates directly to the effectiveness of interventions delivered by nurses. However, it is not unreasonable to assume that these interventions can be delivered by qualified nurses. Therefore, implications for nursing practice can still be drawn from the evidence.

**Recommendation 1.0**

Nurses promote healthy eating and physical activity throughout the lifecycle beginning at an early age.  
*Level IV*

**Discussion of Evidence**

Primary prevention of obesity and overweight should begin early in childhood (The Center for Weight and Health, 2001). In fact, a review conducted by Dobbins, Lockett, Michel, Beyers, Feldman, Vohra & Micucci (2001) found evidence that children are more susceptible to efforts that promote behaviour change than are adolescents. A review of the literature on pediatric overweight (The Center for Weight and Health, 2001) suggests that interventions to improve nutrition and physical activity in children may provide children with immediate benefits such as:

- Improvements in adult health;
- Modify chronic disease risks in childhood, thereby lowering rates and risks in adults; and
- Modify children's health behaviours and thereby lead to improved and sustained behaviours in adulthood that could further reduce risks for a variety of chronic diseases.

Nurses, across practice settings, are encouraged to promote healthy lifestyle behaviours in order to reduce the risks and the associated health impacts of being overweight or obese (International Council of Nurses, 2000). Rather than emphasizing body weight, nurses can assist clients to set health goals related to physical activity and healthy eating. Promoting healthy eating and active living among all children, regardless of size and shape, has the potential to optimize good health and minimize the prejudice against larger individuals (McVey, 2004, personal communication).
In a systematic review of physical activity promotion and obesity prevention interventions in children and youth, authors Thomas, Ciliska, Wilson-Abra, Miccuci, Dobbins & Dwyer (2004) found some evidence, albeit limited, regarding the impact of obesity prevention, nutrition promotion, and physical activity promotion interventions on outcomes related to eating disorders. For example, increased attention to body image may lead to more body dissatisfaction in those who are overweight. Therefore, interventions should be carefully planned so that efforts to promote healthy eating, physical activity, and healthy weights do not have a detrimental impact on body image and the development of disordered eating attitudes and behaviours and/or stigmatization (Thomas et al., 2004). Further, interventions should be evaluated and outcome measures should include measures of body image and weight-control behaviours. Appendix E contains a list of resources to promote healthy eating and physical activity with clients at population, school, family, and individual levels.

### Recommendation 2.0

Nurses advocate for healthy public policies that include:
- Monitoring and surveillance data at the population level regarding **Level IV**:
  - Nutrition;
  - Physical activity; and
  - Measures of adiposity including obesity and overweight status.
- Healthy community design. **Level IV**
- Health promoting school policies. **Level IIb**
- Legislation to limit advertising directed towards children. **Level IIb**
- Community-wide campaigns. **Level Ia**

### Discussion of Evidence

Changes in public policy are required to create environments that are more conducive to healthy eating and physical activity behaviours. Policy changes can promote an environment in which healthy choices are simple, accessible, and affordable. The U.S. Surgeon General’s Report on overweight and obesity (2001) suggests that environmental modifications provide the best opportunity for obesity prevention. Ecological models, such as the one proposed in this guideline, direct nurses to take action aimed at promoting healthy behaviours on multiple levels for maximum impact (Raine, 2004). Such policies require investments by governments at all levels. To support nurses in these advocacy efforts, the RNAO has developed a *Political Action and Information Toolkit* (1999). Information about this resource can be found in Appendix E. Nurses can help create supportive “non-obesogenic” environments by advocating for and participating in the development of policies in the following key areas:
- Surveillance data;
- Community design;
- Health promoting school policies;
- Legislation to limit advertising towards children; and
- Community-wide campaigns.
Primary Prevention of Childhood Obesity

Surveillance data
There are limited Canadian data on children's food consumption and physical activity levels. Further, Canadian surveillance on body weight and height is limited to self-report. Given these knowledge limitations about obesity and associated factors in children and youth, Raine (2004) calls for a comprehensive coordinated Canadian surveillance system to monitor the:

- Rates of obesity based on accurate measurement, costs of obesity, and impacts of interventions;
- Food intake and nutritional status of the Canadian population; and
- Physical activity levels of the Canadian population.

This system would need to include valid reliable measures in these areas for children and youth.

Community design
Community design and transportation have been identified as key priorities in Canada for the prevention of obesity (Canadian Population Health Initiative [CPHI] of the Canadian Institute for Health Information [CIHI] and the Institute of Nutrition, Metabolism and Diabetes [INMD] of the Canadian Institutes of Health Research [CIHR], 2003). Similarly, the American Public Health Association and the U.S. Institute of Medicine (IOM) (2004) identified these areas as key to a population level approach to obesity prevention.

Urban sprawl creates communities that encourage the use of the automobile and discourage walking and bicycling (Raine, 2004). An American cross sectional ecological study showed that as urban sprawl increases, obesity increases and the likelihood of engaging in physical activity decreases (Ewing, Schmid, Killingsworth, Zlot, & Raudenbush, 2003).

Based on research findings and the recommendations of Canadian and U.S. reports (CPHI, 2004; IOM, 2004), policy changes can be made to help create supportive environments for obesity prevention. What can nurses do? They can advocate for policies and other initiatives that call for:

- A review of municipal by-laws to determine whether they encourage or discourage physical activity at the neighbourhood and broader community levels;
- Changes to zoning laws and land use requirements to include: mixed land use, safe pedestrian access to schools, community centres, and shopping; adequate construction of sidewalks and bicycle lanes; and the reservation of certain downtown spots as automobile-free pedestrian areas;
- Expansion of opportunities for physical activity, including recreational facilities, parks, playgrounds, sidewalks, bike paths, routes for walking or bicycling to school, and safe streets and neighbourhoods, especially for high-risk populations;
- Prioritization of capital improvement projects according to their impact on increasing opportunities for participation in physical activity;
- Creation of streets that facilitate pedestrian and cyclist use and institute traffic calming measures;
- Improvements to existing street, sidewalk, and street-crossing safety of routes to school; and
- Building of schools within walking and bicycling distance of the neighbourhoods they serve.

It is important to note that community design that focuses on obesity prevention must apply to rural, suburban, and urban communities. Nurses can engage politicians, developers, and consumers to consider the importance of the relationship between urban design and obesity.
Health promoting school polices

The Center for Disease Control (CDC) Task Force on Community Preventative Services (2001), based on a systematic review of community interventions to increase physical activity, strongly recommends school-based physical education programs as an effective measure in increasing physical activity behaviour, energy expenditure, and aerobic capacity. In a systematic review of the effectiveness of programs to increase physical activity and prevent obesity in children and youth, Thomas and colleagues (2004) found that the amount of physical activity that students did during class was associated with the qualifications of the teachers. Students taught by physical education specialists participated in more physical activity than those taught by either regular classroom teachers or those with additional training. Three studies cited in this review found that additional physical activity classes were associated with improved outcomes. The results of the same review indicate that, based on the findings of observational studies, fewer children were actively commuting to school and thus losing a valuable opportunity to build physical activity into their daily lives. In addition, the Thomas review noted that the nutritional intake in students could be modified when the food source (e.g., cafeterias, vending machines) was altered.

Therefore, to prevent obesity in children and youth, nurses can advocate for, and participate in the development of school and school-board policies that:

- Protect and promote physical education classes for all students in kindergarten through to grade 12;
- Require the involvement of physical education specialists in the delivery of physical education classes;
- Promote the sale and consumption of healthy foods in schools (e.g., cafeterias, vending machines, and lunch programs); and
- Promote active transportation to and from school.

Nurses could also advocate that these policies be expanded beyond schools to include other community venues such as day care settings, community centres, and recreation facilities.

Legislation to limit advertising towards children

There is evidence suggesting a link between advertising of food directed towards children and higher food intake. Indeed, a number of European countries have already introduced legislation to ban advertising aimed at children (Dietz, Bland, Gortmaker, Molloy, & Schmid, 2002; Henry J. Kaiser Family Foundation, 2004; Lewis & Hill, 1998; Tschannen-Moran, Lewis, & Farrell, 2004).

A study in New Zealand (Wilson, Quigley, & Mansoor, 1999) analyzed 269 advertisements during 42 hours of taped television programs geared to children. The results indicated that food choices being promoted were those associated with an increased risk of obesity in children. A UK study monitored 91 hours of viewing on four television stations and found that snack food ads geared to children accounted for 60% of all advertisements (Levis & Hill, 1998). A study of the impact of television advertising on children using ad recognition and food intake measurement in 42 children between the ages of 9 and 11 years concluded that exposure to food advertising promoted food consumption (Halford, Gillispie, Brown, Pontin, & Dovey, 2003). It has been suggested that snacking in front of the TV may lead to overeating because the amount of food consumed may not be noticed (French, Story, & Jeffery, 2001).
Community-wide campaigns

There is strong evidence to suggest that implementing community-wide public health campaigns is an effective strategy in promoting healthy eating and physical activity (CDC, 2001; Raine, 2004).

To add to the body of knowledge related to obesity prevention, research of existing and future policies is required to determine their effectiveness (Raine, 2004).

Recommendation 3.0

Nurses promote healthy eating and physical activity at population, community, family, and individual levels by planning, implementing, and evaluating interventions that are:

- Tailored to the strengths and needs of the client and are Level IV:
  - Developmentally appropriate;
  - Culturally and linguistically relevant; and
  - Gender-specific.
- Affordable and accessible. Level IV
- Focused on behaviour change. Level IIb

Discussion of Evidence

Published research to date has not found a specific group of interventions to be effective in the prevention of childhood obesity (CIHI, 2003; Thomas et al., 2004). However, there are trends in the literature that offer some evidence of successful interventions.

The effectiveness of parent involvement in interventions aimed at physical activity enhancement and obesity prevention was found to be mixed in one systematic review (Thomas et al., 2004). However, families provide the primary environment for a healthy lifestyle (Baranowski, Cullen, Nicklas & Thompson, 2002). Thus, they provide the foundation of a healthy lifestyle including healthy eating and physical activity behaviours. Parents are role models for their children and as such, parents should be involved in prevention strategies (Baranowski et al., 2002).

School-based approaches have a chance for success because they: i) provide contact to large numbers of children over several years; ii) can influence nutrition since children generally eat one meal at school; and iii) provide opportunities for physical activity (Baranowski et al., 2002; Micucci, Thomas, & Vohra, 2002).

Several reviews conclude that there is a need to develop and evaluate interventions that are gender specific and culturally relevant (Ammerman, Lindquist, Lohr & Hersey, 2002). Thomas and colleagues (2004) found that some studies reported that interventions were effective for some sub-populations and not others (e.g., for girls and not boys). Therefore, targeted interventions may be required, but program evaluations and other research should be conducted to determine the effectiveness of such targeted programs.
One systematic review (Yancey et al., 2004) of population-based interventions targeting ethno-specific communities reported that these studies placed emphasis on engaging communities and building coalitions from the study outset. Fewer than half of the 23 studies retrieved for the review included outcome evaluation data. Statistically significant effects were few and modest, and the authors of this study identified a critical need for improved and better evaluation methods, greater surveillance, and a need for funding more rigorous intervention studies in multi-ethnic and ethno-specific settings.

The Canadian Fitness and Lifestyle Research Institute (1999) reported poverty to be associated with lower levels of physical activity among Canadian children and youth. According to the National Longitudinal Survey of Children and Youth (2002), as family income increases, the proportion of overweight children decreases. CIHR (2003) recommended the following activities to address social inequities identified as determinants of obesity by key participants at the national Obesity in Canada: Identifying Policy Priorities roundtable:

- Explore food insecurity in relation to obesity; and
- Research differences in obesity according to such factors as socio-economic status, region, and level of urbanization.

The evidence suggests that general education programs improve only knowledge outcomes; therefore, to be effective, interventions need to be behaviour-focused (Baranowski, 2002; Micucci et al., 2002). Thomas and colleagues (2004) found that school-based education targeting behaviour change and, in particular, specific behaviour changes, were more effective in changing eating behaviours than those which focused on knowledge development alone.

**Recommendation 4.0**

Nurses maximize the effectiveness of their healthy lifestyle interventions through interactions that are of sufficient intensity and duration to effect behaviour change.

**Discussion of Evidence**

Single session interventions do not result in significant behavioural change related to physical activity and healthy eating (Thomas et al., 2004). Thus, repeated sessions are recommended in order to maximize effectiveness. Several reviews of the research have attempted to identify the benefits of specific intensities of interventions. To date, however, there is no consistent finding regarding the number of sessions required to change physical activity or nutritional behaviour (Anmerman et al., 2002; Thomas et al., 2004). Dishman and Buckworth (1996) further suggested that interventions be based on the principles of behaviour modification, delivered to groups using mediated approaches. When the physical activity is unsupervised, the emphasis should be on leisure physical activity of low intensity, regardless of the duration or frequency of participation.
Recommendation 5.0
Nurses support exclusive breastfeeding for infants until six months of age.

Discussion of Evidence
According to the World Health Organization (WHO, 2003), breastfeeding conveys a protective effect against subsequent obesity development for the child. This was shown to be the case in at least 20 studies involving nearly 40,000 subjects where all but two examined studies showed a protective effect. While the WHO recognizes the issue of potential confounding within studies, they concluded that promoting breastfeeding has many benefits and the prevention of obesity is probably one of them. In a recent systematic review and meta-analysis conducted by authors Arenz, Ruckerl, Koletzko & von Kries (2004), a review of nine studies, involving more than 69,000 participants, indicated that breastfeeding is associated with a small but protective effect against obesity risks in later childhood.

Health Canada recently released updated recommendations for infant feeding (Health Canada, 2004). The new recommendations state that:

“Exclusive breastfeeding is recommended for the first six months of life for healthy term infants, as breast milk is the best food for optimal growth. Infants should be introduced to nutrient-rich, solid foods with particular attention to iron at six months with continued breastfeeding for up to two years and beyond” pg. 1

In accordance with the RNAO Breastfeeding Best Practice Guideline for Nurses (2003), six months of exclusive breastfeeding is recommended with introduction of complementary foods and continued breastfeeding up to two years and beyond for healthy child growth and development.

Nurses can work with individuals and families to promote breastfeeding and undertake breastfeeding-friendly initiatives to create environments that are supportive of breastfeeding. Nurses should ensure that their clients have the appropriate knowledge and skills to make informed choices and, at the same time, recognize and honour maternal choice in the decision to breastfeed.
**Recommendation 6.0**

Nurses promote healthy eating using *Canada's Food Guide to Healthy Eating* and focus on:

- Using age-appropriate portion sizes;
- Emphasizing fruits and vegetables;
- Limiting sugar containing beverages (e.g., soft drinks and fruit juices);
- Limiting consumption of energy-dense snack foods high in sugar and fat (e.g., potato chips, french fries, candy); and
- Breakfast consumption.

**Level IV**

**Discussion of Evidence**

The purpose of *Canada's Food Guide to Healthy Eating* (*Food Guide*) (1992) is to promote health eating and better health among Canadians. Underlying this goal is the concept that healthy eating is the sum total of all food choices made over time, so it is the overall pattern of foods eaten and not one food or even one day of eating that determines if an eating pattern is healthy. The rainbow pattern of the *Food Guide* depicts the proportion of each of the food groups that is recommended in the diet (i.e., grain products, vegetables and fruit, milk products and meat and alternatives). Directional statements found on the *Food Guide* (e.g., choose lower fat foods more often) provide more guidance on choosing foods. The *Food Guide* recommends a number of servings for each of the food groups, but identifies that different people need different amounts of food based on their age, gender, and activity level. Health Canada also released two accompanying documents (see Appendix E) one for preschoolers and another for school-aged children containing adaptations of the *Food Guide*.

Health Canada has embarked on a process of reviewing the science behind nutrition recommendations in collaboration with the U.S. Food and Nutrition Board, Institute of Medicine of The National Academies. As a result, a number of scientific reports (The Dietary Reference Intakes) have been released. This review of the underlying science has prompted a review of *Canada's Food Guide to Healthy Eating* (1992). For more information on the review, refer to the Office of Nutrition Policy and Promotion on Health Canada's web site: [http://www.hc-sc.gc.ca/hpfb-dgpsa/onpp-bppn/index_e.html](http://www.hc-sc.gc.ca/hpfb-dgpsa/onpp-bppn/index_e.html).

There is little data available on Canadians’ dietary intake and practices in general, and there is almost no information on children's dietary intake. Furthermore, the type of study that would be necessary to produce strong evidence for the effectiveness of certain dietary patterns has not been conducted, likely related to the nature of the interventions and the potential risk associated with conducting nutritional studies on growing children.

**Using age-appropriate serving sizes**

There is evidence that portion sizes have been increasing across a range of foods eaten inside as well as outside the home. Data collected in the U.S. indicate that current foods available in the marketplace almost universally exceed the sizes of those offered in the past, and are considerably larger than federal standard portion sizes (Young & Nestle, 2002). This trend has been attributed to multiple factors such as people eating away from home more often, marketing becoming more concentrated, more new products available, price competition, and profits rising with larger product sizes (Young & Nestle, 2002). The association between portion size and energy intake in children of different age groups and the contextual factors that may influence this requires further study. It is apparent that the portion size available for many snack foods and beverages can provide a disproportionate amount of calories (or energy) to a child's overall diet (Lobstein et al., 2004).
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Emphasizing fruits and vegetables
Vegetables and fruits are high in water and fibre, and incorporating them in the diet may promote satiety and decrease overall energy intake. Some intervention studies in adults to increase vegetable and fruit consumption and decrease dietary fat consumption have resulted in weight loss among study participants; however, the evidence is weak. Confounding the evidence is the fact that descriptions of foods that were considered fruits or vegetables (e.g., dried fruits, juices, fried potatoes) are missing from many of the studies (Rolls, Ello-Martin & Tohill, 2004). However, by emphasizing vegetables and fruits, health professionals can send a positive message related to healthy weights rather than a restrictive one, and there are other benefits of consuming vegetables and fruit related to chronic disease prevention (Ammerman et al., 2002; WHO, 2003).

Limiting sugar-containing beverages
Canadian food disappearance data indicates that annual per capita consumption of soft drinks has increased substantially. In 1976, average per capita consumption of soft drinks was 56 litres, in 2002, average per capita consumption had increased to 100 litres per year (CIHI, 2004). Because this data is only a crude indicator, it is not clear whether consumption has actually increased among children. While there is no clear and consistent association between increased intake of added sugars and BMI, one study examining consumption of sugar-sweetened drinks and childhood obesity concluded that for each additional serving of sugar-sweetened drink consumed, the odds of becoming obese increased by 60% (IOM, 2004). Furthermore, there is evidence based on a cluster randomized control design trial that a targeted, school based intervention produced a modest reduction in the number of soft drinks consumed by children 7-11 years of age. This was associated with a reduction in the number of overweight and obese children at 12 months (James, Thomas, Cavan & Kerr, 2004).

Limit consumption of energy-dense snack foods high in sugar and fat
There is little data available on the dietary intake of Ontario children. A report of trends in the health of Canadian youth indicated that in 1998, about 22% of Grade 6 boys and 15% of Grade 6 girls reported eating potato chips daily. The same study reported that in 1998, the proportion of Canadian youth in Grades 6, 8 and 10 indicating that they consumed candy or chocolate bars daily ranged from 21-28% (King, Boyce, & King, 1999). Another study of children in Perth County, Ontario found that the proportion of children in Grades 4 through 8 who daily consumed fries was 12.5%, potato chips 34.9%, and cakes, cookies, pies, and doughnuts was 34.6% (Evers, Taylor, Manske & Midgett, 2001). While there is no evidence of a causal link between consumption of snack foods high in sugar and fat (such as potato chips, french fries, candy) and obesity, it is apparent that the portion size available for many snack foods (and beverages) can contribute a disproportionate amount of calories (or energy) to child's overall diet (Lobstein et al., 2004).

Breakfast consumption
Analysis of U.S. national survey data suggests that eating breakfast, and eating certain types of foods at breakfast, is related to BMI in adults. Skipping breakfast, or eating a high fat, low-fibre breakfast, such as meat and eggs, was found to be associated with higher BMI’s. Eating ready-to-eat or cooked cereal or quick breads was associated with significantly lower BMI. This finding is consistent with literature that shows that skipping breakfast may lead to overeating later in the day (Cho, Dietrich, Brown, Clark, & Block, 2003). In the U.S., results of large national nutrition surveys indicate that breakfast consumption over the past 25 years has declined for children and adolescents, with the greatest decline occurring among adolescents (Siega-Riz, Popkin, & Carson, 1998).
A study of Canadian children found that about one quarter of children in Grades 4 through 8 reported they do not eat breakfast every day, with a sharp increase among girls occurring in Grade 7. Furthermore, children who skipped breakfast had a less healthy dietary pattern overall, with significantly higher consumption of soft drinks and fries. Another Canadian study found that about 5% of 4-year old children in low-income Ontario communities skipped breakfast, and among those who consumed breakfast, 33% ate less than 15% of their daily energy intake at breakfast. Although there is no set requirement for minimum energy requirements at breakfast, the mean proportion of energy consumed at breakfast in a U.S. study was 26%. Authors concluded that parents require education not only on the importance of breakfast eating, but also on what constitutes an appropriate breakfast (Hooper & Evers, 2003). Generally, it is recommended that children eat one serving of vegetable or fruit, one milk product serving and one serving of a low fat grain product or meat and alternative (refer to Canada’s Food Guide for Healthy Eating) for breakfast.

**Recommendation 7.0**

Nurses promote healthy eating patterns using interventions with one or more of the following components:

- Small group activities;
- Goal setting;
- Social support;
- Interactive food-related activities (e.g., cooking, taste-testing); and
- Family participation.

*Level Ia*

**Discussion of Evidence**

Ammerman and colleagues (2002) conducted an extensive rigorous systematic review of the literature (92 studies) of behavioural interventions focusing on dietary outcomes related to the reduction of cancer risk. While this review reported that the lack of similarities across studies in outcome measures, study design, analysis strategy, and intervention technique makes it difficult to draw broad conclusions about the most efficacious behavioural dietary interventions, it does provide evidence from both randomized controlled trials (RCTs) and non-randomized controlled trials to support specific intervention components that hold promise for modifying dietary behaviour.
Based on the findings from this review, nurses, independently or in collaboration with other health professionals, should incorporate one or more of the following components into their interventions aimed at modifying dietary behaviour:

- **Small group activities**
  The use of the small group setting is effective in reducing intake of dietary fat (Ammerman et al., 2002).

- **Goal setting**
  Studies that employed goal setting were more likely to report statistically significant fruit and vegetable intake and reduced intake of dietary fat (Ammerman et al., 2002). Additionally, Thomas and colleagues (2004), in their review of both RCTs and cohort studies, reported that the only study that measured the impact of goal setting on physical activity and nutrition found that goal setting improved outcomes.

- **Social support**
  The use of social support components was associated with more favourable vegetable and fruit intake (Ammerman et al., 2002).

- **Interactive food-related activities**
  Studies that employed interactive activities involving food were more likely to report statistically significant increases in vegetable and fruit intake and appeared promising regarding reductions in fat intake (Ammerman et al., 2002). Such interactive activities included cooking or taste-testing to promote fruit and vegetable intake.

- **Family participation**
  Interventions with a family participation component were associated with significant decreases in fat intake (Ammerman et al., 2002). However, Thomas and colleagues (2004) reported inconsistent results regarding interventions with parental involvement.

The Ammerman (2002) review also concluded that interventions conducted among children to increase vegetable and fruit intake were more successful in increasing fruit intake than vegetable intake, and those interventions developed to decrease fat intake were more successful in reducing total fat intake among children and less successful at reducing saturated fat than interventions conducted among adults.

Few studies were appropriately designed or reported to allow interpretation of evidence for the efficacy of interventions by population subgroup, particularly low income or ethnic subgroups (Ammerman et al., 2002). Therefore, further research in these areas is recommended.
Recommendation 8.0

Nurses promote increased physical activity based on Canada's Physical Activity Guides for Children and Youth using interventions with one or more of the following components:

- Behaviour modification. *Level Ib*
- Leisure activity of low intensity that is gradually increased to recommended levels. *Level IV*
- Sustained, repeated interventions. *Level IV*

Discussion of Evidence

Health Canada and the Canadian Society for Exercise Physiology (CSEP) launched *Canada's Physical Activity Guides for Children and Youth* (Guides) in 2002. The target audiences for the Guides include inactive children, youth and their teachers, families, physicians, and community leaders. Their aim is to create awareness and understanding about the importance of physical activity to healthy growth and development and facilitate increased levels of physical activity.

The Guides recommend that in order to accumulate at least 90 minutes of physical activity every day, less active children and youth begin by increasing the amount of time they currently spend being physically active by at least 30 minutes more per day and decreasing the time they currently spend on sedentary activities (such as watching TV, playing computer games, and surfing the Internet) by at least 30 minutes per day. The Guides suggests that the increase in physical activity should include a combination of moderate activity (such as brisk walking, skating and bike riding) with vigorous activity (such as running and playing soccer).

Dishman and Buckworth (1996) conducted a systematic review and meta-analysis review of 127 studies from 1965 to 1995 that included children and adolescents from kindergarten to Grade 12, as well as adults. This meta-analysis examined the efficacy of interventions for increasing physical activity among 131,000 subjects in community, worksite, school, home and health care settings. These authors found that the success for increasing physical activity in community and clinical settings was about 70-88% with interventions, compared to a rate of 50% without interventions. They further suggested that interventions be based on the principles of behaviour modification delivered to groups using mediated approaches, or when the physical activity is unsupervised, emphasizing leisure physical activity of low intensity, regardless of the duration or frequency of participation.

Intervention effects were larger among studies using mediated approaches than with those that used face-to-face delivery. Interventions in community settings and interventions delivered to groups reported larger effects, and contrasted with those in schools and other settings. However, the maintenance of successful physical activity after the conclusion of an intervention has been less encouraging and therefore, researchers suggest the importance of sustained or repeated implementation of interventions.
Sallis (2000) conducted a comprehensive review of correlates of physical activity for children ages 3-12 and adolescents ages 13-18. From 108 published papers, 54 studies of children and 54 studies of adolescents were reviewed. Nine variables were confirmed in this review as consistently associated with physical activity of children or adolescents: perceived physical competence, intention to be physically active, perceived barriers, parent support, direct help from parents, support from significant others, program/facility access, opportunity to be active, and time outdoors.

**Recommendation 9.0**

Nurses promote a decrease in sedentary activities with emphasis on reducing the amount of time clients spend watching TV, playing video games, and engaging in recreational computer use.

**Discussion of Evidence**

Reduced physical activity and increased sedentary behaviours in childhood are associated with being overweight and obese in Canadian children aged 7-11 years (Tremblay & Willms, 2003). Children who spend long hours watching television, playing video games or using computers for recreation are spending time being inactive. In Canada, watching 3-5 hours of television per day was found to increase the likelihood of obesity in children (age 7-11) by over 50% compared to watching 0-2 hours a day (Tremblay & Willms, 2003). Canadian children between the ages of 2 and 11 watched an average of 14.6 hours of television each week in 2002 (Statistics Canada, 2002b). Similarly, youth between the ages of 12 and 17 watched 13.7 hours.

These sedentary activities can have additional impacts on the healthy development of children and youth. A statistically significant relationship has been found between media use and obesity rates in children (Crespo, Smit, Troiano, Bartlett, Macera, & Anderson, 2001; Dietz & Gortmaker, 1985; 1993; Gortmaker, Must, Sobol, Peterson, Colditz, & Dietz, 1996; Lowry, Wechsler, Galuska, Fulton, & Kann, 2002; Proctor, Moore, Gao, Cupples, Bradlee, Hood, & Ellison, 2003). Adolescents who watched more TV/video tend to consume more foods with a higher percentage of fat energy, more soft drinks, fried foods, and number of snacks per day (Utter, Neumark-Sztainer, Jeffery, & Story, 2003). As well, children and youth are being exposed to repeated advertisements for high fat, calorie dense foods. Further, while on the computer, playing video games or watching television, children tend not to be interacting socially with family and friends and are often alone.

Nurses can advocate for, promote, develop, and implement interventions to reduce physical inactivity among children and youth, based on quality research evidence. For example, a recent Canadian literature review found six reported school-based studies between 1999 and 2003 to reduce television watching, video time and increase active play time (Thomas et al., 2004). While the quality of these six studies were variable, one good quality randomized trial reported a drop in television and video time along with BMI, triceps skin-fold thickness and waist to hip ratio (Robinson, 1999). This American study included an 18-lesson program delivered over seven months, with strategies to limit access to television and video, budgeting television and video time, and increasing active play time. To add to our understanding of effective interventions to reduce sedentary time among children and youth, it would be worthwhile to replicate Robinson's (1999) study in Canadian schools (Thomas et al., 2004). As well, while these studies were conducted in a school setting, family and community settings may also benefit from this type of intervention but further research is warranted.
Two randomized trials using television-locking devices have been tested in randomized trials with obese children (Faith et al., 2001; Ford, McDonald, Owens, & Robinson, 2002). Ford and colleagues (2002) found a decrease in screen time, and an increase in organized physical activity, but they did not measure weight, BMI, or fat. Faith et al. (2001) used a device that paired screen access to build up of a certain level of cycling of a stationary cycle ergometer. The experimental group had a significant reduction in total body fat and percent leg fat. These devices have potential to reduce screen time and to increase physical activity. Research is warranted to determine their effectiveness in the primary prevention of obesity in children and youth.

Health Canada’s *Physical Activity Guides for Children and Youth* (2002) recommend decreasing the amount of time children spend engaged in sedentary activities such as watching television or movies, playing video or computer games, and chatting on the internet. These guidelines advise making these behaviour changes over time starting with 30 minutes less per day. The Canadian Nurses Association and the College of Family Physicians of Canada (2002) supports the recommendations of these guides. Additionally, the Canadian Paediatric Society (2002) endorses the guides and recommends families be encouraged to:

- Reduce screen time and limit daily television watching to one hour or less for preschoolers and two hours or less for early school-aged children (2003); and
- Prevent any child from having a television, computer, or video game equipment in his or her bedroom (2003).

**Recommendation 10.0**

Nurses work with school communities to implement school-based strategies for the prevention of obesity using a multi-component approach including:

- Integrating healthy eating and physical activity messages into curricula;
- Advocating for and supporting the implementation of quality daily physical education taught by specialist physical education teachers;
- Advocating for and supporting the implementation of quality daily physical activity (including vigorous physical activity);
- Using youth driven approaches with an information and advocacy component;
- Offering healthy choices in cafeterias and vending machines;
- Increasing physical activity opportunities at recess and during lunch breaks; and
- Forming community partnerships and coalitions.

**Discussion of Evidence**

Schools are an ideal setting for primary prevention programs for children (CDC, 1997) as they offer a formal setting for children and youth to acquire health knowledge and related skill, develop health attitudes and beliefs, and provide a physical and social environment that supports the health and well being of students and staff (Micucci et al., 2002). The results of four systematic reviews suggest that there is very good evidence that school-based interventions are effective in increasing physical activity during school hours and fair evidence that physical activity outside of school hours is increased (CIHR, 2003). In a systematic review of 12 primary studies regarding the health promoting schools approach and 32 reviews of the effectiveness of school health promotion, Lister-Sharp and colleagues (1999) found that, although the evidence is limited, the health promoting schools approach can have a positive impact on the social and physical school environment in areas of school lunch and physical activity programs. McArthur (1998), in a meta-analysis
of 12 studies related to the effectiveness of school-based cardiovascular health and nutrition programs in changing eating behaviours, concluded that such programs have a significant effect on the eating behaviours of children.

Guidelines from the National Center for Chronic Disease Prevention and Health Promotion recommend that school-based programs help children and youth acquire the capability to help youth establish lifelong healthy physical activity patterns by delivering programs that are enjoyable, and by creating a physical and social environment that enables physical activity (CDC, 1997). Although published research to date has not determined the long-term effects of school-based strategies (The Center for Weight and Health, 2001), there are trends evident in the literature that identify areas of success.

The results of three reviews suggest that there is good but limited evidence that grade school children who were exposed to school-based physical activity programs lead more active lives as adults (Dobbins et al., 2001; Khan, et al., 2002; Stone, McKenzie, Welk & Booth, 1998). Two reviews examined the effects of changes to the school-based physical activity curriculum on physical activity outcomes (Kahn et al. 2002; Stone et al, 2001). The most effective interventions included curricula that promoted increased physical activity during the whole day (recess, lunch, class-time, and physical education classes) and printed materials (Dobbins et al., 2001).

Nurses may work with school communities (e.g., school advisory councils, principals, teachers, students, and school boards) to promote the integration of physical activity into classroom teaching, active lunch and recess, and to support environmental changes through the provision of healthy food choices whether from a cafeteria or vending machines (Micucci, Thomas, & Vohra, 2002). Nurses can also work to develop and implement policies with schools and school boards to integrate daily physical activity and healthy choices in cafeterias and vending machines. Multifaceted interventions that include classroom instruction, parent and family involvement, and changes in the school environment are recommended for maximum effect (Lister-Sharp, Chapman, Stewart-Brown, & Sowden, 1999; Micucci et al., 2002; Thomas et al., 2004).

Ideally, for an increase in physical activity levels and in healthy eating choices there needs to be a change in behaviour which is best accomplished through a multi-faceted approach using a population health approach (CIHR, 2003). Nurses work to increase the awareness of government and the public through community partnerships and coalitions building within the population health framework. Many studies indicate that partnering with school boards, school staff, parents, and community agencies is a means to most effectively change behaviour (Micucci et al., 2002). Nurses must focus on changing physical activity behaviour through building, strengthening, and maintaining social networks that provide supportive relationships for behaviour change (CDC, 2001). School-based interventions should be multi-faceted, combining a classroom program with environmental changes in school, home or community – cafeterias, physical education and activity, lunch, recess and after school (Micucci et al., 2002; Thomas et al., 2004).
Recommendation 11.0

Nurses support a family-centred approach to promote healthy eating and physical activity.

Discussion of Evidence

The family environment is a major source of influence for children in the modeling of health behaviours and is therefore an appropriate target for nursing interventions. It has been well established that overweight parents tend to have overweight children. In addition to genetic resemblances, family members tend to prefer similar food choices and physical activity pursuits (Davison, & Birch, 2002). Eating behaviours of children and adolescents are shaped by parental feeding behaviours. One study found that the best predictor of 3-5 year old children's ability to regulate energy intake was parental control in feeding; mothers who were more controlling of their children's food intake had children who showed less ability to self-regulate their energy intake (Johnson & Birch, 1994). In addition, parent's concern about their child's weight status and restriction of access to food were associated with negative self-evaluations among 5-year old girls (Davison & Birch, 2001). In a systematic review conducted by Sallis (2000) parental support, sibling physical activity, direct help from parents, and opportunities to exercise were associated with an increase in children's physical activity.

A systematic review regarding the effectiveness of interventions to promote healthy eating in preschool children found that needs-focused, individual counseling was successful in improving the quality of the diet and diet-related organizational skills in mothers (Tedstone, Aviles, Shetty, & Daniels, 1998). The authors concluded that parental involvement may improve the effectiveness of interventions; however, research in this area is needed.

Nurses can assist families in understanding the interaction between genetics, familial, and environmental factors in childhood obesity and provide anticipatory guidance around the development of parental skills which focus on health-centred rather than weight-centred attitudes and behaviours around healthy eating and physical activity (Golan & Crow, 2004; Haire-Joshu & Nanney, 2002). However, more research needs to be conducted to strengthen our understanding of the parental role in the prevention of childhood obesity (Golan & Crow, 2004).
Recommendation 12.0

Nurses assess physical growth and development of children and adolescents which includes:

■ Discussing and documenting basic dietary patterns;
■ Discussing and documenting physical activity patterns including sedentary activity (e.g., television and computer time);
■ Identifying individual and family risk factors for childhood obesity;
■ Accurately measuring and recording height and weight;
■ Calculating Body Mass Index (BMI) for children two years of age and older;
■ Plotting BMI for age on appropriate U.S. Centre for Disease Control pediatric growth charts as recommended by Health Canada; and
■ Monitoring changes in BMI, dietary and physical activity patterns over time and noting important variations.

Discussion of Evidence

Several critical components need to be included in a nurse's assessment of physical growth and development in children and adolescents. A lifestyle history should be included in this assessment. The nurse should ask questions that elicit information pertaining to the eating patterns of the child and his/her family. This should include types of foods consumed, as well as the frequency and quantity of those foods that are eaten. Also it is important to ask questions related to the activity patterns of the child. The nurse should collect sufficient information about the child to be able to formulate a clear understanding of “a typical day” in a child's life with regard to their dietary and activity patterns (Katzmarzyk, Janssen, & Ardern, 2003; Lobstein et al., 2004). See Appendix F for a sample resource tool. Canada's Food Guide and Canada's Physical Activity Guides for Children and Youth (2002) are excellent and easily available resources to discuss with the child/family in clinical practice.

Monitoring children's growth includes ongoing assessments of height and weight. Health professionals are obliged to use accurate, reliable measurements. Therefore, accurately calibrated, well-maintained quality equipment and standardized measurement techniques are used when assessing height and weight in all children. Note: Measurement of height and weight should be done in a clinical setting. Children over the age of two years are measured using standing height and weight. Children's heights and weights are to be recorded using the CDC age - and gender specific - growth charts. Sample CDC height and weight and BMI charts for boys and girls are included in Appendix G & H, I & J and the website links from which these charts can be downloaded is found in Appendix E.

The CDC chart includes Body Mass Index (BMI), which is a ratio weight to height calculated using the equation: BMI = weight (kg) / height (m²). Although BMI is NOT a measure of body fat, it does relate to body fat in children and body fat measurements are not practical for routine clinical care. BMI in adults is related to co-morbidities of overweight and does predict future obesity risk in children and adolescents.
The current recommendations from the Canadian Paediatric Society, The College of Family Physicians of Canada, the Dietitians of Canada and the Community Health Nurses Association of Canada (2004) suggest the use of the following:

- BMI-for-age to screen children from age two onwards to identify those who may be a risk for conditions and illnesses related to excess body fat;
- CDC BMI-for-age charts for Canadian children in clinical and community settings;
- Routine assessment of growth and development as part of the child’s health maintenance visit in a primary health care setting, given the rising prevalence and associated short- and long-term health risks of paediatric obesity;
- Evaluation and possible treatment of children suspected to be overweight, with a BMI-for-age at or above 95th percentile with or without complications of obesity, or with a BMI-for-age at or above 95th percentile with or without complications; and
- A family-centered approach to counseling to promote healthy eating and physical activity and reduce sedentary activity or behaviour.

In future, international growth charts may be developed for use in Canada.

In addition, the nurse’s assessment should include questions and observations related to individual or familial obesity risk factors. Studies have shown that children who have a genetic propensity for weight gain are more likely to become obese if they grow up in an environment that promotes overeating and inactivity (Lobstein et al., 2004) (Recommendation 11.0).

**Recommendation 13.0**

Nurses assist clients to access community resources and opportunities to engage in healthy eating and physical activity through:

- Direct referral of clients to community resources;
- Dissemination of information about available community resources; and
- Promotion of low and no cost physical activity options (e.g., hiking, walking, active commuting, subsidized programs).

**Discussion of Evidence**

Nurses can play a key role in helping children and families to increase physical activity by helping them to locate community resources and participate in active leisure activities.

In a systematic review of 10 studies, Kahn and colleagues (2002) found sufficient evidence to recommend creating new facilities and increasing access to existing facilities for physical activity combined with the distribution of information about these resources. Children who participate in recreational activities such as art or dance as well as sports are less likely to be overweight or obese (CPHI, 2003; Tremblay & Willms, 2003).
Inventories of resources that are available to children and families are important in order to facilitate access to community-based programs and services. Resources may be available through municipalities, worksites, schools, or private organizations. Barriers that clients face in accessing these resources, such as cost or the need for transportation may be addressed by nurses through awareness of special funding programs or by creating social networks and setting up “buddy” systems.

Nurses may help to promote available resources using social marketing which applies commercial marketing strategies to the dissemination of health promotion messages (Rogers, 2003). Rogers identifies five essential elements in a social marketing campaign: 1) Identify the specific audience, 2) Pretest ideas, 3) Position the message (for example, choosing a memorable and meaningful name for the campaign), 4) Keep costs low (Rogers states that conventional wisdom is to have a small cost rather than giving things away free) 5) Include humour and use communication channels (i.e. paid advertising) rather than public service announcements which can be inappropriately timed. Nurses may consider developing partnerships with other organizations to develop advertising, communications, and public relations plans to promote physical activity. Such activities may form part of a multi-strategy community wide campaign.

<table>
<thead>
<tr>
<th>Recommendation 14.0</th>
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<tr>
<td>Nurses are aware of, refer to, and collaborate with appropriate allied health providers based on findings from nursing assessment.</td>
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</table>

Discussion of Evidence
Given the complexity and multi-factorial causes of childhood obesity, an appreciation of various approaches and prevention intervention will be of benefit. Nurses determine the appropriate care provider and make referrals as necessary (College of Nurses of Ontario, 2004). When working as part of a team, service coordination is important to ensure that all needed services are provided by the most qualified team member. Nurses collaborate with other health care providers including dietitians, primary health care professionals and other community providers and make referrals as necessary.
**Education Recommendations**

### Recommendation 15.0

Nursing academic and continuing education programs incorporate the following into their curricula:

- Childhood obesity, associated health risks, risk and protective factors (including the content of the RNAO nursing best practice guideline *Primary Prevention of Childhood Obesity*).
- Population health promotion and prevention principles and interventions aimed at:
  - Health promoting behaviours such as physical activity and healthy eating;
  - Obesity prevention;
  - Chronic disease prevention; and
  - Determinants of health (particularly as they impact the risks for obesity and chronic diseases).
- Healthy public policy (HPP) and the nurse's role in HPP development.
- Research skills, including:
  - Literature searches and reviews;
  - Critical appraisal and analysis;
  - Program evaluation; and
  - Dissemination of research findings to varied audiences; and
- Individual/family focused interventions (including support and counseling) aimed at promoting healthy behaviours and behaviour change.

**Level IV**

### Discussion of Evidence

Obesity is a chronic medical condition and the most common health problem facing children today (WHO, 2002). Knowledge and skills need to form part of nursing and allied health curricula to ensure that health professionals understand the complexity of obesity and are able to develop and implement effective interventions.

Education programs for health professionals have, in the past, provided limited education related to nutrition and physical activity or knowledge and skill development opportunities regarding counseling of patients on these health issues (IOM, 2004). To ensure that nurses and allied health care providers are sufficiently prepared to discuss obesity risks and prevention strategies with clients, academic and continuing education programs should ensure that their curricula provides related knowledge around the basic science and physiology behind nutrition and physical activity along with skill development opportunities. Further, the evaluations of such programs of study and participant examinations should include this content. Such skills would include accurate calculation and interpretation of BMI for children and individual and family counseling related to physical activity and nutrition.
Primary Prevention of Childhood Obesity

A study on the attitudes and skills of health care professionals (pediatricians, pediatric nurse practitioners, and registered dietitians) on the management of childhood obesity found that skill in the area of behavioural change was one of the least utilized (Story et al., 2002), however all three of the health professional groups expressed a desire to acquire additional training in the areas of behavioural change as well as effective parenting strategies related to healthy lifestyle promotion.

Existing knowledge regarding the influence of the current obesogenic environment suggests that, in order to be effective in the prevention of childhood obesity, nurses and nursing education programs will need to focus on community and population level risk factors, barriers, facilitators, and interventions rather than only those related to individuals and families (CIHR, 2003; IOM, 2004; Raine, 2004).

Furthermore, in an effort to enhance the knowledge and skills of their members, health professional organizations, such as the RNAO, should also create and disseminate evidence-based clinical guidelines and other educational materials on childhood obesity prevention as a means of supporting practice.

Tackling Canada’s childhood obesity problem will require a comprehensive multidisciplinary approach that must be supported by sufficient resources, organizational supports, education, and attitudes. Therefore, nurses should advocate that, in addition to those for nursing, the curricula of academic and continuing education programs for allied health disciplines should also include this content. As well, nurses need to be informed about, and skilled in, interdisciplinary and intersectoral practice and collaboration, building and sustaining community coalitions, as well as interdisciplinary and participatory research.
Recommendation 16.0

Nurses advocate for, and participate in, high quality research addressing identified knowledge gaps in the prevention of childhood obesity.

Discussion of Evidence

Given the gaps identified in existing knowledge related to the primary prevention of obesity in children and youth, further quality research in this area is needed. Nurses can contribute to an increased understanding of and funding for applied, effective, quality prevention strategies. Nurses can provide leadership and participate in conducting nursing and interdisciplinary research related to obesity prevention. Specifically, further research in the following areas is warranted (Lobstein et al., 2004; Thomas et al., 2004):

- Effective primary prevention strategies;
- Long-term effectiveness of obesity prevention programs and policies;
- Barriers to and facilitators of improving nutrition and physical activity for populations, communities, families, and individuals;
- Gender, socioeconomic, and cultural factors associated with obesity; and
- BMI norms for children according to age, gender, and ethnicity.

In order to add to the body of knowledge regarding effective obesity prevention interventions, program and policy evaluations should be undertaken, built into the initial planning phases of program and policy development, continue throughout the project, and involve follow-up post intervention. Such evaluations should involve process and short- and long-term outcome measures. Further, these evaluations should involve outcome measures that include valid measurement of physical activity, nutritional intake, adiposity, obesity and overweight.

Nurses, in collaboration with other health professionals, are encouraged to lead research activities outlined in the above discussion and to explicitly use theoretical frameworks to guide development of prevention programs (Thomas et al., 2004).

In addition to the research gaps identified, the panel also noted a lack of assessment tools for research purposes and for everyday practical use. Such tools are greatly needed to support practitioners in practice and should be evidence-based and evaluated to ensure their validity and reliability. Further, surveillance data is needed to assist in the determination of effective interventions at the population level (CIHR, 2003; Raine, 2004).
Recommendation 17.0

- Nurses advocate for organizations to develop a plan for implementation that is evidence-based and includes:
  - An assessment of organizational readiness and barriers to education;
  - Involvement of all stakeholders (whether in a direct or indirect supportive function) who will contribute to the implementation process;
  - Dedication of a qualified individual to provide the support needed for the education and implementation process;
  - Ongoing opportunities for discussion and education to reinforce the importance of best practices;
  - Opportunities for reflection on personal and organizational experience in implementing evidence-based guidelines;
  - An organizational culture that is supportive of evidence-based practice; and
  - Evaluation of effectiveness.

In this regard, RNAO (through a panel of nurses, researchers and administrators) has developed the Toolkit: Implementation of Clinical Practice Guidelines based on available evidence, theoretical perspectives and consensus. The Toolkit is recommended for guiding the implementation of the RNAO guideline Primary Prevention of Childhood Obesity.

Discussion of Evidence

A review of 18 studies (RCTs, controlled before-and-after studies and interrupted time series analyses) of clinical guidelines by professions allied to medicine (nurses, midwives and other) versus standard physician care, found that, despite limited research, there is some evidence that guidelines are effective in improving client care based on process and outcome measures (Thomas, Cullum, McColl, Rousseau, Soutter, & Steen, 2004). However, nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. To this end, RNAO (through a panel of nurses, researchers and administrators) has developed the Toolkit: Implementation of Clinical Practice Guidelines (2002), based on available evidence, theoretical perspectives and consensus. The RNAO strongly recommends the use of this Toolkit for guiding the implementation of this best practice guideline. For a description of the Toolkit, see Appendix L.

In order to add to the body of knowledge related to effective interventions for childhood obesity prevention, the implementation of this plan requires evaluation. This evaluation should include outcome measures as well as process measures related to organizational development and obesity prevention strategies.
Evaluation/Monitoring of Guideline

Organizations implementing this nursing best practice guideline need to consider how the implementation and its impact will be monitored and evaluated. The following table, based on a framework outlined in the RNAO *Toolkit: Implementation of Clinical Practice Guidelines* (2002) illustrates some indicators for monitoring and evaluation:

<table>
<thead>
<tr>
<th>Structure</th>
<th>Process</th>
<th>Outcome</th>
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<tr>
<td><strong>Objectives</strong></td>
<td><strong>Process</strong></td>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>To evaluate the supports available in the organization which allow nurses to design and implement interventions to achieve healthy eating and increased physical activity in children.</td>
<td>To evaluate the changes in practice which lead towards healthy eating and increased physical activity in children.</td>
<td>To evaluate the impact of the implementation of the recommendations.</td>
</tr>
<tr>
<td><strong>Organization/Unit</strong></td>
<td>Review of best practice recommendations by organizational committees responsible for policies or procedures.</td>
<td>Organizational policies reviewed and modified.</td>
</tr>
<tr>
<td>Availability of client education resources consistent with guideline recommendations.</td>
<td>Client education resources developed/acquired/modified to reflect guideline recommendations.</td>
<td>Incorporation of strategies to improve healthy eating and physical activity in children, into client education material.</td>
</tr>
<tr>
<td>Organizational mission statement that include support of healthy eating and physical activity in children.</td>
<td>Mission statement changed to reflect support of healthy eating and increased physical activity in children.</td>
<td>Organizational/unit mission statement reflects a commitment to support healthy eating and increased physical activity in children.</td>
</tr>
<tr>
<td></td>
<td>Percentage of nurses or allied health professionals referring children and families to other health care professionals for nutrition, physical activity or health problems related to weight.</td>
<td>Percentage of children admitted to facilities with their usual healthy eating and physical activity patterns recorded.</td>
</tr>
</tbody>
</table>
## Primary Prevention of Childhood Obesity

<table>
<thead>
<tr>
<th>Structure</th>
<th>Process</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Percentage of children who are active for more than 90 minutes per day (30 minutes at a vigorous pace and 60 minutes at a moderate pace).</td>
<td>- Percentage of children who received advice on healthy eating and physical activity patterns at a clinic/school intervention.</td>
<td>- Percentage of children who increase physical activity by 30 minutes or decrease sedentary behaviour by 30 minutes.</td>
</tr>
<tr>
<td></td>
<td>- Percentage of children who consume at least 5 servings of fruit and vegetables per day.</td>
<td>- Percentage of children and families accessing community resources.</td>
</tr>
<tr>
<td>Financial Costs</td>
<td>- Provision of adequate financial resources for staffing to implement education and supportive interventions to achieve healthy eating and increased physical activity.</td>
<td>- Costs for education, interventions, supports.</td>
</tr>
</tbody>
</table>
|           | - Costs related to implementing guidelines:  
  * education;  
  * documentation system;  
  * support systems. | | |
Implementation Strategies

The Registered Nurses Association of Ontario and the guideline development panel have compiled a list of implementation strategies to assist healthcare organizations or healthcare disciplines who are interested in implementing this guideline. A summary of these strategies are as follows:

■ Have a dedicated person such as an advanced practice nurse or a clinical resource nurse who will provide support, clinical expertise and leadership. The individual should also have good interpersonal, facilitation and project management skills.

■ Establish a steering committee comprised of key stakeholders and members committed to leading the initiative. Keep a work plan to track activities, responsibilities and timelines.

■ Provide educational sessions and ongoing support for implementation. The education sessions may consist of presentations, facilitator’s guide, handouts, and case studies. Binders, posters and pocket cards may be used as ongoing reminders of the training. Plan education sessions that are interactive, include problem solving, address issues of immediate concern and offer opportunities to practice new skills (Davies & Edwards, 2004).

■ Provide organizational support such as having the structures in place to facilitate the implementation. For example, hiring replacement staff so participants will not be distracted by concerns about work and having an organizational philosophy that reflects the value of best practices through policies and procedures. Develop new assessment and documentation tools (Davies & Edwards, 2004).

■ Identify and support designated best practice champions on each unit/setting to promote and support implementation. Celebrate milestones and achievements, acknowledging work well done (Davies & Edwards, 2004).

■ Organizations implementing this guideline should look at a range of self-learning, group learning, mentorship and reinforcement strategies that will over time, build the knowledge and confidence of nurses in implementing this guideline.

■ Teamwork, collaborative assessment and treatment planning with the client and family and through interdisciplinary work are beneficial in implementing guidelines successfully. Referral should be made as necessary to services or resources in the community.

■ The RNAO’s Advanced/Clinical Practice Fellowships (ACPF) Project is another way that registered nurses in Ontario may apply for a fellowship and have an opportunity to work with a mentor who has expertise in research, program evaluation and health promotion and disease prevention.

In addition to the tips mentioned above, the RNAO has developed resources that are available on the website. A Toolkit for implementing guidelines can be helpful if used appropriately. A brief description about this Toolkit can be found in Appendix L. A full version of the document in pdf format is also available at the RNAO website, www.rnnao.org/bestpractices.
**Process for Update/Review of Guideline**

The Registered Nurses’ Association of Ontario proposes to update this Best Practice Guideline as follows:

1. Each nursing best practice guideline will be reviewed by a team of specialists (Review Team) in the topic area every three years following the last set of revisions.

2. During the three-year period between development and revision, RNAO Nursing Best Practice Guidelines program staff will regularly monitor for new and relevant evidence in the field.

3. Based on the results of the monitor, program staff will recommend an earlier revision period. Appropriate consultation with a team of members comprising original panel members and other specialists in the field will help inform the decision to review and revise the guideline earlier than the three-year milestone.

4. Three months prior to the three-year review milestone, the program staff will commence the planning of the review process by:
   a) Inviting specialists in the field to participate in the Review Team. The Review Team will be comprised of members from the original panel as well as other recommended specialists.
   b) Compiling feedback received, questions encountered during the dissemination phase as well as other comments and experiences of implementation sites.
   c) Compiling new clinical practice guidelines in the field, systematic reviews, meta-analysis papers, technical reviews, randomized controlled trial research, and other relevant literature.
   d) Developing detailed work plan with target dates and deliverables.

5. The revised guideline will undergo dissemination based on established structures and processes.
References


Primary Prevention of Childhood Obesity


Primary Prevention of Childhood Obesity


Micucci, S., Thomas, H., & Vohra, J. (2002). The effectiveness of school-based strategies for the primary prevention of obesity and for promoting physical activity and/or nutrition, the major modifiable risk factors for type 2 diabetes: A review of reviews. Hamilton, ON: The Effective Public Health Practice Project.


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**Primary Prevention of Childhood Obesity**

**Bibliography**


Nursing Best Practice Guideline


Primary Prevention of Childhood Obesity


Appendix A: Glossary of Terms

Body Mass Index (BMI)
A ratio equal to weight (kg) by height (m²) and calculated as kg/m² used to classify adults as either underweight (BMI <18.5 kg/ m²) normal weight (BMI =18.5 – 24.9 kg/ m²), overweight (BMI>25.0 – 29.9 kg/ m²), or obese (BMI >30 kg/ m²). BMI correlates with body fat but is not a direct measure of body fat. Standardized cutoffs have been developed for children based on percentile curves based on selected body measurements of U.S. children www.cdc.gov/growthcharts.

Client
An individual, family/significant other, group, community, and/or population that is the target of nursing activities.

Clinical Practice Guidelines or Best Practice Guidelines
Systematically developed statements to assist practitioner and client decision-making about appropriate health care for specific clinical (practice) circumstances (Field & Lohr, 1990).

Consensus
A process for making decisions, not a scientific method for creating new knowledge. At best, consensus development merely makes the use of the best available information, be that scientific data or the collective wisdom of the participants (Black et al., 1999).

Education Recommendations
Statements of educational requirements and educational approaches/strategies for the introduction, implementation, and sustainability of best practice guidelines.

Ecological Framework
A theoretical model that identifies multiple levels of influence (or factors) in the design, implementation, and evaluation of health promotion programs (McLeroy, Bibeau, Steckler, & Glanz, 1988).

Energy Balance
The state in which the total energy intake equals total energy output.

Family
Whomever the person defines as being family. Family members can include: parents, children, siblings, friends, neighbours, and significant people in the community.
Health Promotion
In 1986, the World Health Organization took the lead in providing scope for health promotion by creating a working definition and framework for health promotion action. Health promotion is defined as, “...the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs and to change or cope with the environment.”

Interdisciplinary
Healthcare professionals representing expertise from various health disciplines and other sectors who participate in the process of supporting clients and their families in the care process.

Meta-analysis
The use of statistical methods to summarize the results of independent studies, therefore providing more precise estimates of the effects of healthcare than those derived from the individual studies included in a review (Alderson, Green & Higgins, 2004).

Obesity
A condition of excess body fat. There is no direct measure of body fat in childhood that is readily applicable in the clinical setting. The current recommendation is for use of BMI for age and gender above 95th percentile using CDC growth curves to define those at increased health risk because of overweight. A new international cut-off for BMI which corresponds to the adult levels of 25 and 30 for overweight and obesity respectively are recommended for population studies (Cole, Bellizzi, Flegal, & Dietz, 2000).

Obesogenic Environment
A social, physical or economic environment that promotes sedentary or less active lifestyles and the over-consumption of food, and in particular, a greater consumption of high-fat, high-calorie foods.

Organization & Policy Recommendations
Statements of conditions required for a practice setting that enable the successful implementation of the best practice guideline. The conditions for success are largely the responsibility of the organization, although they may have implications for policy at a broader government or societal level.

Overweight
Classification of overweight in children is currently a BMI (age and gender specific) >85th percentile and <95th percentile. Research studies often use recently recommended international cut-offs corresponding to a BMI of 25 – 29.9 used in adults.
Primary Prevention of Childhood Obesity

Practice Recommendations
Statements, directed at health professionals, of best practice that are evidence-based or considered best practice by a panel of experts.

Primary prevention
Prevention of disease in individuals or populations through promotion of health, and separate from the prevention of complications of existing disease.

Randomized Controlled Trial
A research study in which subjects are assigned to conditions on the basis of chance, and where at least one of the conditions is a control or comparison condition.

Systematic review
Application of a rigorous scientific approach to the preparation of a review article (National Health and Medical Research Centre, 1998). Systematic reviews establish where the effects of health care are consistent and research results can be applied across populations, settings, and differences in treatment (e.g., dose); and where effects may vary significantly. The use of explicit, systematic methods in reviews limits bias (systematic errors) and reduces chance effects, thus providing more reliable results upon which to draw conclusions and make decisions (Alderson, Green & Higgins, 2004).

Quality Daily Physical Activity (QDPA)
A program of activities that aims to provide children and adolescents with a sustained period(s) of time each day to participate in moderate and vigorous physical activity. This concept is often referred to by other names such as Daily Vigorous Physical Activity or Quality Daily Physical Education. These terms often are used when referring to activity in the school setting; however QDPA is not limited to the school setting nor to the health and physical education curricula.
Appendix B: Search Strategy for Existing Evidence

STEP 1 – Database Search
A database search for existing obesity guidelines was conducted by a university health sciences library. An initial search of the MEDLINE, Embase and CINAHL databases for guidelines and articles published from January 1, 1995 to September 2003 was conducted using the following search terms: “obesity”, “children”, “adolescents”, “adults”, “overweight”, “body mass index”, “health risks/complications”, “prevention of obesity”, “chronic disease”, “primary prevention”, “interventions”, “randomized controlled trials”, “systematic reviews”, “practice guideline(s)”, “clinical practice guideline(s)”, “standards”, “consensus statement(s)”, “consensus”, “evidence based guidelines” and “best practice guidelines.

STEP 2 – Structured Website Search
One individual searched an established list of websites for content related to the topic area. This list of sites, reviewed and updated in December 2003, was compiled based on existing knowledge of evidence-based practice websites, known guideline developers, and recommendations from the literature. Presence or absence of guidelines was noted for each site searched as well as date searched. The websites at times did not house a guideline but directed to another website or source for guideline retrieval. Guidelines were either downloaded if full versions were available or were ordered by phone/email.

- Alberta Heritage Foundation for Medical Research – Health Technology Assessment: [http://www.ahfmr.ab.ca/hta](http://www.ahfmr.ab.ca/hta)
- Alberta Medical Association – Clinical Practice Guidelines: [http://www.albertadoctors.org](http://www.albertadoctors.org)
- American College of Chest Physicians: [http://www.chestnet.org/guidelines](http://www.chestnet.org/guidelines)
- Canadian Coordinating Office for Health Technology Assessment: [http://www.ccohta.ca](http://www.ccohta.ca)
- Canadian Task Force on Preventive Health Care: [http://www.ctfphc.or](http://www.ctfphc.or)
- Centers for Disease Control and Prevention: [http://www.cdc.gov](http://www.cdc.gov)
- Centre for Evidence-Based Mental Health: [http://cebmh.com](http://cebmh.com)
- Centre for Evidence-Based Pharmacotherapy: [http://www.aston.ac.uk/lhs/teaching/pharmacy/ceb](http://www.aston.ac.uk/lhs/teaching/pharmacy/ceb)
- Centre for Health Evidence: [http://www.cche.net/che/home.asp](http://www.cche.net/che/home.asp)
- Centre for Health Services and Policy Research: [http://www.chspr.ubc.ca](http://www.chspr.ubc.ca)
- Cochrane Database of Systematic Reviews: [http://www.update-software.com/cochrane](http://www.update-software.com/cochrane)
- Database of Abstracts of Reviews of Effectiveness: [http://www.york.ac.uk/inst/crd/daare.hp.htm](http://www.york.ac.uk/inst/crd/daare.hp.htm)
- Evidence-based On-Call: [http://www.ebonlycall.org](http://www.ebonlycall.org)
- Institute of Child Health: [http://www.ich.ucl.ac.uk/ich](http://www.ich.ucl.ac.uk/ich)
STEP 3 – Search Engine Web Search
A supplemental website search for existing childhood obesity guidelines was conducted via the search engine “Google”, using the search terms identified above. One individual conducted this search, noting the search term results, the websites reviewed, date and a summary of the findings. The search results were further critiqued by a second individual who identified guidelines and literature not previously retrieved.

STEP 4 – Hand Search/Panel Contributions
Additionally, panel members were already in possession of a few of the identified guidelines as well as systematic reviews. In some instances, a guideline and systematic reviews was identified by panel members and not found through the previous search strategies.
STEP 5 – Core Screening Criteria
This above search method revealed five guidelines, several systematic reviews and numerous articles related to obesity and children.

The final step in determining whether the clinical practice guideline would be critically appraised was to have two individuals screen the guidelines based on the following criteria. These criteria were determined by panel consensus:
- Guideline is in English;
- Guideline is dated no earlier than 1997;
- Guideline is strictly about the topic area;
- Guideline was evidence based, e.g.-contained references, description of evidence sources of evidence; and
- Guideline is available and accessible for retrieval.

RESULTS OF THE SEARCH STRATEGY
The results of the search strategy and the decision to critically appraise identified guidelines are itemized below. Five guidelines met the screening criteria and were critically appraised using the Appraisal of Guidelines for Research and Evaluation (AGREE Collaboration, 2001) instrument.

<table>
<thead>
<tr>
<th>TITLE OF THE PRACTICE GUIDELINE RETRIEVED AND CRITICALLY APPRAISED</th>
</tr>
</thead>
</table>
# Appendix C: Effective Public Health Practice Project (Quality Assessment Tool)

1. Was the search strategy for primary studies stated?  
   Y  N  U

2. Was the search comprehensive?  
   Y  N  U  
   *(Score Yes if 2 different databases, e.g., social science, medical were searched)*  
   Electronic databases: nursing, medical, social science (English only or other languages)  
   Other sources: key informants, reference lists

3. Were the relevance criteria for the primary studies described?  
   Y  N  U  
   Criteria include: participants, interventions, outcome, design

4. Was the quality (strengths and weaknesses) of the primary studies assessed?  
   Y  N  U

5. Did the quality assessment include:  
   Y  N  U  
   *(Minimum requirement: 3/6 of the following criteria)*  
   study design  intervention  
   study sample  outcome measures  
   confounders  follow up

6. Does the review integrate the findings beyond describing or listing primary study results?  
   Y  N  U

7. Is the reported data from all studies adequate to support the review’s conclusions?  
   Y  N  U  
   TOTAL SCORE ____________________________

   (total score 6-7)  (total score 4-5)  (total score 3 or less)

   QUALITY RATING (circle one)  
   STRONG  MODERATE  WEAK  

   Y – Yes  N – No  U – Unknown

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Source: Public Health Research, Education & Development Program
Hamilton, Ontario.
Appendix D: Systematic Reviews Critically Appraised

The following reviews were critically appraised to assist in the development of initial recommendations.


Miccuci, S., Thomas, H., & Vohra, J. (2002). The effectiveness of school-based strategies for the primary prevention of obesity and for promoting physical activity and/or nutrition, the major modifiable risk factors for Type 2 Diabetes: A review of reviews. Effective Public Health Practice Project. Hamilton: City of Hamilton, Social & Public Health Services.

Appendix E: Internet Resources

The development panel, with input from external reviewers and other key stakeholders, has compiled a list of organizations, websites, and other resources that may be helpful for promoting healthy eating and physical activity with children, families, schools, communities, or populations.

Links to websites that are external to the RNAO are provided for information purposes only. The RNAO is not responsible for the quality, accuracy, reliability, or currency of the information provided through these sources. Further, the RNAO has not determined the extent to which these resources have been evaluated. Questions related to these resources should be directed to the source.

Active 2010: www.active2010.ca
- A new comprehensive strategy to increase participation in sport and physical activity throughout Ontario
- Pause to Play: www.pausetoplay.ca
  - Website for kids who want to be active.

Active Healthy Kids Canada: www.activehealthykids.ca
- A national charitable organization that works in partnership with others to ensure a future where all children and youth will value, participate in, and have the skills necessary to make a lifelong commitment to active, healthy living.
- Programs include:
  - Activ8
    - a curriculum-based physical activity challenge program
    - Activ8 is available in French and English. Available in four different grade modules: Kindergarten, Grades 1-3, Grades 4-6, and Grades 7-8.
  - Ready Set Go: The Sports Website for Families: www.readysetgo.org
    - This site provides information, tools and community links to help parents encourage children to get involved in sports.

- Halton Active Living Network www.choices4health.org has produced a list of books for children from Kindergarten to Grade 8 with positive physical activity messages to help children improve their reading skills and encourage them to include physical activity into their daily lives.

Aero-Pop Movin’ Groovin’ Program: www.aero-pop.com
- An innovative, new, fitness/dance curriculum unit for teachers across Canada to assist with teaching the Health and Physical Education curriculum.
Alberta Sport, Recreation, Parks and Wildlife Foundation

- Ever Active Schools: [www.everactive.org](http://www.everactive.org)
  - This evidence-based program aims to encourage, identify and recognize schools that value and promote positive healthy behaviours and practices, as well as physical activity opportunities, through initiatives that affect the entire school community.
  - Recognizes and rewards schools that focus on physical activity and well-being in their school communities and provides resources to critically reflect and measure current practices, policies and environments.

- Live Outside the Box: [www.liveoutsidethebox.ca](http://www.liveoutsidethebox.ca)
  - A 3-year campaign that aims to increase physical activity levels in 10 to 14 year-olds across Alberta.
  - A website, sponsored by the Alberta Sport, Recreation, Parks and Wildlife Foundation (ASRPWF), funded by Alberta Community Development, which serves as a portal to information on active living, and the first of a series of youth activity posters targeted at youth aged 10-14.

- Schools Come Alive: [www.schoolscomealive.org](http://www.schoolscomealive.org)
  - Provides leadership through workshops, resource development and collaborative partnerships which focus on increasing physical activity opportunities and promoting healthy active lifestyles in Alberta school communities.
  - Produces the newsletter “ACTIVE” tri-annually, providing a copy to every school and school board in Alberta, delivers workshops in an attempt to reach the varied and diverse needs of school communities, and provides quality physical and health education in-servicing in Alberta.

American Public Health Association: [www.apha.org](http://www.apha.org)

- Toolkit for intervention of overweight children and adolescents: [www.apha.org/ppp/obesity_toolkit](http://www.apha.org/ppp/obesity_toolkit)

BAM! Body and Mind: [www.bam.gov](http://www.bam.gov)

- An online destination for kids created by the US Centers for Disease Control and Prevention (CDC).
- Designed for kids 9-13 years old, BAM! Body and Mind gives them the information they need to make healthy lifestyle choices. The site focuses on topics that kids have identified as important – such as stress and physical fitness – using kid-friendly lingo, games, quizzes, and other interactive features.
- BAM! Body and Mind also serves as an aid to teachers, providing them with interactive, educational, and fun activities that are linked to the national education standards for science and health.
Primary Prevention of Childhood Obesity

Calgary Health Region: www.calgaryhealthregion.ca
- Community Prevention of Childhood Obesity Initiative: www.calgaryhealthregion.ca/childobesity
  - This Calgary-based program provides leadership and support for community-based prevention of childhood obesity through partnership and advocacy.
  - Resources available on this site include:
    - Community Prevention of Obesity in Canada: The Technical Document
    - Community Prevention of Obesity: A Framework for Community Action
    - Various Mapping Tools
  - Intended for early childhood professionals in daycares or dayhomes, the Snactivity Box contains 22 interactive activities to promote healthy eating and active living habits in children aged between two and six.
  - The Snactivity Box contains written instructions and most of the supplies needed to do the activities (packaged neatly in hanging file folders in an easy-to-carry plastic box). The kit includes 12 healthy eating activities and 10 active living activities.
  - Evaluations are planned for 2005 and will include pilot-testing in about 25 daycares and dayhomes in Calgary and surrounding area.

Canadian Association for Health, Physical Education, Recreation and Dance (CAHPERD): www.cahperd.ca
- A national, charitable, voluntary sector association whose mandate is to influence the healthy development of children and youth by advocating for quality, school-based physical and health education.
- This site contains tools to help communities advocate for Quality Daily Physical Education (including a presentation kit).
- Provides tips and success stories to guide and inspire communities towards change.

Canadian Association for the Advancement of Women and Sport and Physical Activity (CAAWS):
www.caaws.ca
- CAAWS is a national not-for-profit organization founded in 1981 that works in partnership with Sport Canada and with Canada's sport and active living communities to achieve gender equity in the sport community.
- Mothers in Motion: http://caaws.ca/mothersinmotion/home_e.html
  - A website for women who want to lead healthy lifestyles and mentor their children to do the same.

Canadian Fitness and Lifestyle Research Institute: www.cflri.ca
- A national research agency concerned with advising, educating, and informing Canadians about the importance of leading healthy active lifestyles.
Canadian Paediatric Society (CPS) – Caring for Kids: www.cps.ca
- This website is dedicated to children's health issues and provides resources for healthy active living for children.
- In 2001, the CPS launched a national strategy on healthy active living for children and youth and provides its members with information, resources (practice tools, client education resources), and web links that health professionals can use in their practice, with their patients, and their families, and in local communities. (Click first on Programs and Advocacy then on Healthy Active Living). Resources include:
  - Prescription for Healthy Active Kids: www.cps.ca/english/proadv/HAL/prescription.htm
    - This tear-off pad is an easy-to-use tool that helps to monitor a child's progress toward a healthier lifestyle.
    - This quick reference tool is designed to act as a step-by-step guide to assist with counselling children and youth about healthy active living.
- Caring for Kids: www.caringforkids.cps.ca
  - A website designed to provide parents with information about their child's health and well-being.
  - Links to Health Eating (including promoting healthy eating habits) and healthy active living for children and youth.

Canadian Intramural Recreation Association of Ontario: www.cira.mohawkc.on.ca/resource.html
- Not-for-profit organization for education, recreation, and health professionals which aims to encourage, promote, and develop active living, healthy lifestyles, and personal growth through intramural and recreational programs within the educational community.
- Numerous resources for schools and families are available on the site for download and/or purchase. These include:
  - Recess Revival: http://cira.mohawkc.on.ca/FinalRecessRevival.pdf – an implementation guide for the promotion of physical activity and cooperative play for elementary-aged children. As a supplementary guide to CIRA Ontario's Active Playground Resources, assists teachers, playground supervisors and peer leaders in the promotion of fun and cooperative play on the playground.
    - You're It! Tag, Tag and More Tag
    - Dances Even I Would Do
    - Great Gator Games
    - Not Just Another Games Book
    - Another Games Book
    - Mass Appeal
    - Schlockey
    - 50 Games with 50 Tennis Balls
    - Active Playgrounds
    - Why Paper and Scissors Rocks
    - Bang For Your Buck
    - Oodles of Noodles
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Centres for Disease Control and Prevention (CDC): [www.cdc.gov](http://www.cdc.gov)
- CDC Growth Chart Training
  - This site provides growth charts and a PowerPoint presentation on the CDC Growth charts [www.cdc.gov/growthcharts/training/powerpoint/index.htm](http://www.cdc.gov/growthcharts/training/powerpoint/index.htm)
- Guidelines for School and Community Health Programs Promoting Lifelong Healthy Eating
- Guide to Community Preventive Services: [www.thecommunityguide.org](http://www.thecommunityguide.org)

Dietitians of Canada: [www.dietitians.ca](http://www.dietitians.ca)
- Healthy Start for Life: [www.dietitians.ca/healthystart](http://www.dietitians.ca/healthystart)
  - A collaborative national health promotion initiative designed to promote the development of healthy eating and activity patterns during the preschool years (ages 2-5). It aims to help preschoolers form healthy attitudes and behaviours that will become lifelong habits.
  - Practical resources and strategies to help parents and caregivers help their children eat well and keep physically active.
  - Links to resources for health professionals.
  - Downloadable resources based on results of a Needs Assessment and Environmental Scan (both downloadable from the site). The report on the evaluation of this program (also available for download) has not yet been critically appraised.
  - Resources related to healthy eating and physical activity.
- Eating + Activity Tracker (EATracker): [www.dietitians.ca/eatracker](http://www.dietitians.ca/eatracker)
  - A web-based tool that enables visitors to track their day’s food and activity choices and then provides personalized feedback on their total intake of energy (calories) and essential nutrients based on recommendations for age, gender and activity level. Body mass index (BMI) is also calculated to determine if weight falls into a healthy range.
  - Track current food and activity choices, and review progress over time.
- Practice-Based Evidence Network: [www.dieteticsatwork.com/pen](http://www.dieteticsatwork.com/pen)
  - Evidence-based practice tools to optimize nutrition services of health professionals and that will assist health professionals to answer questions that arise in everyday practice.
Effective Public Health Practice Project (EPHPP): www.hamilton.ca/phcs/EPHPP/EPHPPResearch.asp
- Key initiative of the Public Health Research, Education and Development (PHRED) Program (www.phred-redsp.on.ca) jointly funded by the Ontario Ministry of Health and Long-Term Care and the City of Hamilton, Public Health and Community Services.
- Provides systematic reviews and summary statements for practitioners and policy-makers in public health.

Fit, Healthy, and Ready to Learn: A School Health Policy Guide: www.nasbe.org/HealthySchools/fithealthy.mgi
- Provides direction on establishing an overall policy framework for school health programs and specific policies on various topics.
- The policy guide is organized around sample policies that reflect best practice, which can be adapted to fit local circumstances. Also included are explanations of the points addressed in the sample policies, excerpts of actual state and local policies, notable quotations, and other valuable information that supporters can use to justify school health policies.

Go For Green: www.goforgreen.ca
- A national non-profit charitable organization encouraging Canadians to pursue healthy, outdoor physical activities while being good environmental citizens.
- Active and Safe Routes to School Program: www.goforgreen.ca/asrts/home_e.html

Government of Ontario: www.gov.on.ca
- Ontario Public Health Units www.health.gov.on.ca/english/public/contact/phu/phuloc_mn.html
  - Provides a listing of public health units in Ontario.

Health-evidence.ca: www.health-evidence.ca
- Provides a searchable online registry of quality-related effectiveness evidence for decision-making in public health and health promotion.
- Currently oriented to health professionals and policy-makers.
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Health Canada: www.hc-sc.gc.ca

- Public Health Agency
  - Physical Activity Unit
    - Lead responsibility within the Public Health Agency of Canada for delivering on the federal government’s role in physical activity. The work of the Unit is based on an approach to partnerships that is multi-sectoral, multi-level, and multi-disciplinary.
      - This site contains a variety of physical activity resources for children, teachers, and families that include:
        - Family Guide to Physical Activity
        - Teachers Guide to Physical Activity:

- Population Health: www.phac-aspc.gc.ca/ph-sp/phdd
  - School Health (in the Division of Childhood and Adolescence)

  - Access to information regarding Canada’s Food Guide to Healthy Eating, Dietary Reference Intakes, and Healthy Weights.

Heart and Stroke Foundation of Canada: www.heartandstroke.ca

- National voluntary non-profit organization whose mission is to improve the health of Canadians by preventing and reducing disability and death from heart disease and stroke through research, health promotion and advocacy.
- Healthy Living section of the website for valuable information on:
  - How to Get Active
  - Healthy Eating
  - Family Health – for parents with suggestions for keeping active and eating well as a family, including the “11 Ways to Help Your Children Become More Physically Active poster”
  - The Active Living Quiz and the Healthy Eating Quiz
  - Resources for Teachers.
Institute of Medicine (IOM): www.iom.edu

- Preventing Childhood Obesity: Health in the Balance: www.iom.edu/report.asp?id=22596
  - Report describing the findings and recommendations of the U.S.-based IOM’s Committee on Prevention of Obesity in Children and Youth developed as part of a comprehensive national strategy that recommends specific actions for families, schools, industry, communities, and government.
  - Provides a broad-based examination of the nature, extent, and consequences of obesity in U.S. children and youth, including the social, environmental, and dietary factors responsible for its increased prevalence.
  - Action plan lays out explicit goals and recommendations for preventing obesity and promoting healthy weight in children and youth in various segments of society. Explores the actions needed to initiate, support, and sustain the societal and lifestyle changes that can reverse the trend among our children and youth.

Lifestyle Information Network: www.lin.ca

- Provides knowledge management services to the community of individuals, organizations and agencies that have an interest in the development of healthy individuals and healthy communities.
  - Winter Active Kit Tips for winter safety, activity ideas, and fun and motivational information for staying physically active during winter, especially for use in schools.

Long Live Kids Healthy Active Living Program: www.cca-kids.ca/llk.html

- Launched in October 2004, Long Live Kids is a national initiative that encourages children to eat smart, move more and become media-wise. Developed by Concerned Children’s Advertisers www.cca-kids.ca in collaboration with government, community partners and industry supporters. Program partners include Active Healthy Kids Canada; Boys and Girls Clubs of Canada; Canadian Association for Health, Physical Education, Recreation and Dance (CAHPERD); Canadian Diabetes Association; Canadian Home and School Federation; Canadian Teachers’ Federation; Coalition for Active Living; Dietitians of Canada; Health Canada; Kids Help Phone; YMCA; YWCA; and Dr. Rena Mendelson of Ryerson University, School of Nutrition.
  - Long Live Kids is a three-year social marketing campaign designed to educate children, parents and educators about childhood obesity by promoting physical activity, healthy eating and media literacy. Promotes public awareness through a television public service announcement addressing physical activity and healthy eating with a focus on energy balance. Further supported by an educational program delivered to schools and communities across Canada to help children and parents address the obesity problem.

Mission Nutrition: www.missionnutrition.ca

- Educational program designed to promote children’s healthy growth and development, developed by Dietitians of Canada and the team of Registered Dietitians at Kellogg Canada Inc.
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Muskoka-Parry Sound Health Unit
- Kids and Cabin Fever: www.mpshu.on.ca/PhysicalActivity/cabin.htm
  - Suggestions for indoor activities as alternatives to playing outside in inclement weather.

National Institute of Nutrition: www.nin.ca
- Information sheets related to children's nutrition and healthy eating.
- Independent Institute of nutrition science, consumers, government, and industry, to foster effective partnerships among these sectors.

Ontario Physical and Health Education Association (OPHEA): www.ophea.net
- On-line community of individuals and organizations committed to improving the physical health and wellbeing of children and youth.
- Excellent resources for teachers and public health practitioners.

Ottawa Public Health: www.city.ottawa.on.ca
- School Nutrition Report Card:
  www.city.ottawa.on.ca/city_services/yourhealth/youth/nutrition/report_card_en.shtml
  - Tool that will help assess how well your school encourages healthy eating.
- Getting Started: First Steps in Improving Nutrition in Your School:
  www.city.ottawa.on.ca/city_services/yourhealth/youth/nutrition/school_en.shtml
- Fit in Family Time:
  www.city.ottawa.on.ca/city_services/yourhealth/youth/physical_activity/family_en.shtml
  - This resource offers tips for families to reduce sedentary time and be active as a family.

Physical Activity and Family Life: www.edu.pe.ca/activeliving/family.htm
- From PEI's Active Living Alliance: www.edu.pe.ca/activeliving/home.htm,
  Activities to enhance family time together and keep the whole family active.

Public Health Grand Rounds: www.publichealthgrandrounds.unc.edu/
- Series of satellite broadcasts and webcasts presenting real-world case studies on public health issues ranging from obesity to bioterrorism, from SARS to food safety. See “Obesity-Personal Choice or environmental consequence?”

Registered Nurses’ Association of Ontario (RNAO): www.rnao.org
- Health and Nursing Policy Department
  Assists to pursue healthy public policy and to promote the full participation of registered nurses in shaping and delivering health services now and in the future. Available resources include, Taking Action: Political Action and Information Kit for RN's, as well as political action tools and position statements.
- Nursing Best Practice Guidelines Program: www.rnao.org/bestpractices
  Provides an overview of the RNAO BPG program, available guidelines and implementation resources.
Toronto Public Health: www.city.toronto.ca
- Nutrition Matters series
  - Fact sheets on nutrition
- Discover Healthy Eating: www.city.toronto.on.ca/health/dhe_index.htm
  - This fully downloadable curriculum support resource, offers a choice of teaching activities that correspond to Ontario’s Health and Physical Education Curriculum (1998).
  - Includes background information, glossary and a listing of additional resources.

TV – Turnoff Network: www.tvturnoff.org
- National non-profit organization that encourages children and adults to watch much less television in order to promote healthier lives and communities.

VERB: www.cdc.gov/youthcampaign/
- National, multicultural, social marketing campaign coordinated by the U.S. Department of Health and Human Services’ Centers for Disease Control and Prevention (CDC).
- Resources and information to make regular physical activity “cool” for tweens and a fun thing to do. Also, VERB materials for organizations that do not directly provide programs to tweens but can promote the importance of regular physical activity for tweens, such as through communications, advocacy, policy change, and training of program providers.

Victorian Order of Nurses (VON): www.von.ca
- Resources and information on a community health and wellness program.
Appendix F: Discussion Points – Resource Tool

Healthy Weight for Kids: Discussion Points

Questions to ask Parents

- Do you have regular planned meals and snacks on most days?
- Does your family eat meals together regularly?
- Does your child drink more than 4-6 oz of juice each day?
- How many times per week does your child drink sweetened drinks such as soda and fruit drinks?
- How many hours each day does your child watch television and or play video games?
- Do you give your child certain foods as a reward or restrict foods as a punishment?
- How do you feel about your child’s weight?
- Are you familiar with the food guide pyramid and approximate serving size and amount of servings your child needs from each group?

Risk Factors for Childhood Overweight

- Weight of biological mother
- Children with two obese parents
- Parenting style (high degree of control leads to problems)
- Amount of TV watching
- Skipping meals
- Poor eating habits (eating while watching TV, excessive juice or soda)
- Inactive lifestyles

Parents and children each have a role in developing a healthy feeding relationship!

Parents | Child
--- | ---
Plan for positives – expect success | Choose to eat
Prepare and put food on the table | Choose what to eat from food that is offered
Provide support as your child develops eating habits | Choose how much to eat

Children can regulate their own calorie intake. Help parents let children regulate naturally by allowing children to eat when they are hungry and stop when they are full. Parents need to offer a variety of healthful foods at regular meal and snack times, avoid “food handouts,” and try not to reward or punish with certain foods.

Made possible by the AMERICAN DIETETIC ASSOCIATION FOUNDATION from a generous grant provided by MEAD-JOHNSON & CO.

Appendix G: CDC Growth Chart Sample BMI (Girls)

Appendix H: CDC Growth Chart Sample
Weight for Age (Girls)

Appendix I: CDC Growth Chart Sample
BMI (Boys)

Appendix J: CDC Growth Chart Sample
Weight for Age (Boys)

Appendix K: Healthy Active Living
Quick Reference Guide

This quick reference tool is designed to act as a step-by-step guide to assist with counselling children and youth about healthy active living.

This resource is available in the printed version of the RNAO Prevention of Childhood Obesity guideline or from the Canadian Paediatric Society.

Source: Canadian Paediatric Society
100-2204 Walkley Road, Ottawa, Ontario K1G 4G8.
Tel: (613) 526-9397 • Fax: (613) 526-3332 • www.cps.ca • www.caringforkids.cps.ca
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Appendix L: Description of the Toolkit

Best practice guidelines can only be successfully implemented if there are: adequate planning, resources, organizational and administrative support as well as appropriate facilitation. RNAO, through a panel of nurses, researchers and administrators has developed the Toolkit: Implementation of Clinical Practice Guidelines based on available evidence, theoretical perspectives and consensus. The Toolkit is recommended for guiding the implementation of any clinical practice guideline in a healthcare organization.

The Toolkit provides step-by-step directions to individuals and groups involved in planning, coordinating, and facilitating the guideline implementation. Specifically, the Toolkit addresses the following key steps in implementing a guideline:

1. Identifying a well-developed, evidence-based clinical practice guideline.
2. Identification, assessment and engagement of stakeholders.
3. Assessment of environmental readiness for guideline implementation.
4. Identifying and planning evidence-based implementation strategies.
5. Planning and implementing evaluation.
6. Identifying and securing required resources for implementation.

Implementing guidelines in practice that result in successful practice changes and positive clinical impact is a complex undertaking. The Toolkit is one key resource for managing this process.

The Toolkit is available through the Registered Nurses’ Association of Ontario. The document is available in a bound format for a nominal fee, and is also available free of charge from the RNAO website. For more information, an order form or to download the Toolkit, please visit the RNAO website at www.rnao.org/bestpractices.
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Notes:
Nursing Best Practice Guideline

Primary Prevention of Childhood Obesity

This program is funded by the Government of Ontario

RNAO Registered Nurses’ Association of Ontario
L’Association des infirmières et infirmiers autorisés de l’Ontario

NURSING BEST PRACTICE GUIDELINES PROGRAM