Guidelines for creating a new clinical topic Background or updating an existing clinical topic Background document:

Creating a new Background document – following the template below:

- screening, symptoms, risks, co-morbidities - look for relevant links – see suggested sources for Background information
- prevalence data - look for links
- treatment information - look for links
- instead of tables look for links as tables do not always do well in the PEN content editor
- Key Resources for Professionals - link to anything we could that is already in PEN - e.g. calculators, questions, International Guideline Collections, Tools and Resources in the KP

Updating an existing Background document:

- mother pie (stuff that we know hasn't changed) content likely can stay
- any content assessed as no longer being needed because we have a question that covers it or the topic is no longer relevant can be deleted
- any tables that could be deleted and linked to something similar is best
- screening, symptoms, risks, co-morbidities - look for relevant links – see suggested sources for Background information, some content can be left as is if it is something that has not changed
- prevalence data - look for links
- treatment information - look for links that might be more up-to-date than the current content
- Key Resources for Professionals - link to anything we could that is already in PEN - e.g. calculators, questions, International Guideline Collections, Tools and Resources in the KP
- check all links that are being left in to make certain they are to the correct content
- check all links in the references - for example I found a couple of references were the links were good but the content had been updated - so updated the reference date - sometimes happens with government links; if link no longer working look for replacement if needed.

Disease (specify) Background

Disease Etiology

Screening/Diagnosis

Prevalence

Symptoms

Co-Morbidities/Associated Diseases
Give basics but link to a website or an article if appropriate.

Medical Treatment (medications, other health care professionals involved etc.)
Give basics but link to a website or an article if appropriate.

Nutrition Diagnosis
This section is N/A if there is a toolkit available in which case you link to it in this section. If no toolkit available then include:

A nutrition diagnosis describes a nutrition problem that nutrition intervention can resolve or improve. It is written as a PES statement (P= problem; e= etiology; S= signs and symptoms).
Example of a nutrition diagnosis is:

- Inadequate nutrient absorption related to small intestinal villous atrophy evidenced by involuntary weight loss of ***x*** kg in ***x*** months, anemia and osteoporosis.

Reference
American Dietetic Association. International Dietetics and Nutrition Terminology (IDNT), 3rd ed. Online Manual. 2012 [cited 2012 May 4]. Available to DC members from: http://www.dietitians.ca/Member-Resources-A-Z/Member-Resources-A-Z-page/Nutrition-Care-Process/IDNT-Online-Manual.aspx

Nutrition Care

This section is N/A if there is a toolkit available in which case you just link to it in this section.
Example:
See Additional Content: Diabetes/Glucose Intolerance Toolkit.

If no toolkit available then include:
This section includes nutrition care and associated goals. Nutrition care may also be covered in its entirety in the toolkit as well. However, there are some cases where additional information will still be necessary. As an example, see: Metabolic Disease Background.

Food Service Implications
There is a section in the toolkit titled Food and/or Nutrient Delivery Example that includes food service information. Depending on the type of food service information, there may be no information relevant for the Food Service Implications section of the background.

Definitions
Check the PEN glossary prior to creating additional definitions or glossary terms. Glossary items are typically applicable to more than one knowledge pathway. Background definitions are more specific to the individual knowledge pathway. References are needed for all definitions and glossary terms.

Key Resources for Professionals (key resources for the professional to understand the topic: links, books, partner Networks /Interest Groups, Communities of Practice, websites etc.)

When possible just link to the Tools and Resources section of the KP
or
List alphabetically and divide by country of origin
Title: (all capitals)
Description: (Include the publisher name in the description)
URL - (provide links to all languages available**)**

Example:

Canada
Title: The Role of the Registered Dietitian in Dysphagia Assessment and Treatment: A Discussion Paper
Description: The role of the registered dietitian in dysphagia assessment and treatment is described including knowledge and skills needed for conducting swallowing assessments.

Title: The Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada
Description: The Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada is a health professional tool to guide practice.
English
French

United Kingdom
Title: Best Practice Guideline for Dietitians on the Management of Parkinson's
Description: This practice guideline produced by the British Dietetics Association and Parkinson's United Kingdom provides guidance for dietitians working with people with Parkinson's Disease. It includes information about the nutritional consequences of Parkinson's Disease and strategies for managing a variety of nutrition related symptoms.

Web Links Tool & Resource
* If there is more than one general website recommended, then a separate Related Tools & Resources called Web Links should be developed. This would include the title of the KP followed by the term Web Links. It needs to include a disclaimer as websites are dynamic and their PEN review would only occur with review of the KP, generally every three years. In addition content in general websites if often larger than just nutrition content, which cannot be verified by PEN for its information.

Standard Web Links format:
Disclaimer:
These external tools/resources are provided as sources of additional information believed to be reliable and accurate at the time of publication and should not be considered an endorsement of any information, service, product or company.

Group by Countries
Title: KP "name" Web Links
Description: A collection of websites related to xx (name the KP)
Note: hyperlink title to website, unless available in more than one language, then provide the links to each language

Example:

Vegetarian Web Links

These external tools/resources are provided as sources of additional information believed to be reliable and accurate at the time of publication and should not be considered an endorsement of any information, service, product or company.

United States
Title: Vegetarian Diets: A Dietitian's Guide
Description: This website, developed by a registered dietitian, contains information on vegetarianism food guide, food preparation tips, soy foods, weight control and nutrition articles.

Title: The Vegetarian Resource Group
Description: This web site contains articles and position papers on vegetarian diets, recipes, information about restaurants and nutrition through the lifecycle.

Title: Vegetarian Nutrition Dietetic Practice Group
Description: An American Dietetic Association practice group offering continuing education opportunities and information on vegetarian topics.

Additional Resources / Readings for the Professional

Other (controversies, up-and-coming topics, economic considerations etc.)

References (use the standard PEN® format – see PEN® Style Guide page 9)

Template revised January 23, 2019

Example of an updated Background document:

Healthy Weight/Obesity

Category: Health Condition/ Disease
KP Keywords: obesity healthy weight overweight obese loss reduction portion sizes

Background
Healthy Weight/Obesity Background

Last Updated: 2016-02-23
Keywords: obesity healthy weight overweight obese loss reduction

Disease Etiology
Overweight and obesity may be viewed as the development of excess body fat related to an energy imbalance between 'energy in' (calories consumed from food and beverages) and 'energy out' (calories burned on basic body functions and physical activity) (1). However, there are many factors that influence these two components of energy balance. Understanding these factors can help health care professionals appropriately assess, identify and address the etiological determinants of positive energy balance; thereby assisting their clients in developing an optimal individualized plan for effective weight management.

The factors that control 'energy in' and 'energy out' to maintain energy homeostasis have provided a survival advantage as humans evolved (2). However, in our current social context of increased food availability and technological and transportation advances that have reduced daily physical activity, body weight regulation is a challenge. Energy balance is impacted by a number of variables.

Energy Out Factors
Factors that affect 'energy out' (1):

Basal Metabolic Rate (BMR)
In sedentary individuals, BMR accounts for approximately 60 to 75% of daily energy expenditure. Factors that affect BMR include:

- genetics – heritable factors have been reported to be responsible for 45 to 75% of the inter-individual variation in body mass index; however, much more investigation is needed before genetic determinants of body weight can potentially impact clinical management.
- sex – women have approximately 20% lower metabolic rate than men which is mostly due to differences in fat-free mass.
- aging – it has been estimated that BMR reduces about 150 kcal per decade after age 20 as a result of changes in neuroendocrine factors and sarcopenia.
- neuroendocrine factors – these factors can affect BMR at all ages. Sympathetic nervous system activity and thyroid function are two major factors influencing

BMR. Sympathetic nervous activity is also a major determinant of postprandial thermogenesis. Endocrine hormones that affect energy metabolism include cortisol, growth hormone, and testosterone.

- sarcopenia – this loss of muscle mass may result from conditions related to inactivity, nutrition, neuromuscular, endocrine, renal, cardiac, pulmonary, inflammatory, infections, or cancer.
- medications – some drugs reduce thermogenesis (e.g. beta-blockers) while discontinuation of compounds that promote thermogenesis (e.g. beta-adrenergic drugs, stimulants, coffee, or nicotine) can reduce BMR. Medication monographs can be reviewed to determine the side-effects that may impact body weight.
- weight reduction – a 5 to 10% reduction in body weight can reduce resting metabolic rate by as much as 20% in some individuals.

Non-exercise Activity Thermogenesis (NEAT)

NEAT includes acts of daily living, walking, posture and fidgeting and planned physical activity barriers including:

- sociocultural – built environment (i.e. man-made surroundings that provide the setting for human activity, ranging in scale from personal shelter to neighbourhoods to the large-scale civic surroundings), neighbourhood safety, social networks, public transportation, customs and beliefs
- biomedical – physical pain or immobility (e.g. osteoarthritis, fibromyalgia, other chronic conditions)
- psychological – low motivation and energy levels may be a symptom of depression; social anxiety disorder, sleep disorders, substance abuse; body image; self-efficacy. High anxiety may also manifest itself with increased movement such as fidgeting.
- medications – certain types may reduce energy levels, cause drowsiness, or affect coordination.

Energy In Factors

When considering factors that affect 'energy in' it is important to understand the difference between hunger and appetite. Hunger is a physiological sensation that drives an individual to search for and ingest food. “This sensation is elicited after a variable period following the absorption of the nutrients ingested with the previous meal. After the ingestion of a certain amount of food, a suppression of hunger occurs that will lead to the termination of food intake – referred to as satiation. The time of satiation is followed by a period of variable duration that is referred to as satiety. Termination of the period of satiety coincides with the resurgence of the feeling of hunger, leading to consumption of the next meal, thus resuming the cycle of food intake” (2). “Appetite is separately controlled and is relevant to energy balance since it modulates the energy intake side of the equation. This happens because appetite includes various aspects of eating patterns such as the frequency and size of eating episodes (gorging versus nibbling), choices of high fat or low fat foods, energy density of foods consumed, variety of foods accepted, palatability of the diet and variability in day-to-day intake. All of these features can play a role in encouraging energy intake to exceed energy expenditure thereby creating a positive energy balance” (3).

While the factors that affect 'energy in' are very complex, from a clinical point of view, the following categories are helpful to understand:

Sociocultural (1)

- traditions or habits, belief systems, peer pressure, food availability, how food is presented and consumed
- living in a neighbourhood with many fast food restaurants, exposure to food advertising, decreasing affordability of healthy foods, work environment, home environment
- lack of nutrition knowledge.

Physiological or Homeostatic (1)

- Hyperphagia can result from genetic factors (rare but possible - e.g. Prader Willi Syndrome) or from acquired defects related to head trauma or certain cancers).
- hunger versus appetite influences as described above
- Eating patterns and food choices (e.g. extended period of time between meals/snacks, poor satiating food choices) are more commonly related to hyperphagia.
- peptide neurotransmitters such as cholecystokinin (CCK), glucagon-like-peptide (GLP)-1, peptide YY3-36(PYY), neuropeptide Y (NPY) and amylin.

Environmental

Sociocultural and environmental influences (such as food packaging, labeling, advertising, distraction, visual cues) on energy intake are tightly intertwined (4). The changing nature of food portion sizes is an example of the complex consumer and policy factors influencing energy intake.

- Moderate quality evidence suggests that exposure to larger food portion sizes increases the quantity of food consumed by children and adults (5).
- For consumers, large portion sizes may be perceived as good value for money and the presentation of larger portion sizes may become the expected norm conversely health policy and consumer demand may also influence the development of products presented in smaller portion sizes (for example smaller cans of sugar sweetened beverages) (4).
- Trends towards increasing food portion sizes have been reported in several studies from the mid-1970s to the early 2000s in the USA (6), UK (7), Denmark and the Netherlands (8). These observations included foods purchased outside the home and changes to traditional recipes as described in an analysis of Danish recipes where mean portion sizes increased by 21% from 1909 to 2009 (9).
- Temporal changes in food portion sizes may be country specific. Results from Australian cross-sectional surveys of dietary intakes of children (10,11) and adults (12) have found significant changes in portion sizes but with considerable variation with some food portions increasing while other food portion sizes have decreased over time (4).

- Analysis of these trends suggests that while portion sizes are important to consider these changes should not be considered in isolation as additional factors in the food environment including energy density of foods and an increased number of eating occasions per day have also contributed to increased energy intakes in the past three decades (13).

Psychological or Emotional (1)

- Certain psychiatric conditions can make it more difficult to maintain a healthy diet (e.g. depression, binge eating, night eating, attention deficit disorders, post-traumatic stress syndrome, sleep disorders, chronic pain, anxiety disorders, addictions, seasonal affective disorder and cognitive disorders).
- Eating may be used as a coping strategy to deal with a wide range of emotions from stress, loneliness, anger, and grief to happiness.

Medications/drugs that Increase Hunger and Appetite (1)

- These medications/drugs can include oral antidiabetic medications, antidepressants, atypical antipsychotics, anticonvulsants, certain hormonal preparations including corticosteroids and oral contraceptives as well as medicinal and recreational use of marijuana. Medication monographs can be reviewed to determine the side-effects that may impact body weight. Alcohol and mind-altering drugs can promote overeating by increasing appetite and promoting disinhibition.

Genetics and Obesity

With regard to genetic factors, obesity can be divided into three main categories (14):

Monogenic

Monogenic obesity results from an alteration of a single gene, which is rare in humans. Examples include:

- leptin receptor gene (LEPR) mutation (db): humans with this mutation present with early-onset morbid obesity, lack of pubertal development, and a reduced level of growth hormone and thyrotopin
- pro-opiomelanocortin gene (POMC) mutation: result in early-onset obesity, adrenal insufficiency, and red hair pigmentation
- melanocortin 4 receptor gene (MC4R) mutation
- prohormone convertase 1 gene (PC1) mutation
- single-minded, drosophila, homolog of, 1 gene (SIM1) mutation
- neurotropic tyrosine kinase receptor type 2 gene (NTRK2) mutation.

Syndromic

Syndromic obesity relates to a distinct set of associated clinical phenotypes such as intellectual disability, dysmorphic features and organ-specific abnormalities. About 25 of these syndromes have been identified. Five of the most common syndromes include:

- Prader-Willi syndrome (PWS): central obesity, neonatal hypotonia, hyperphagia, hypothalamic hypogonadism, and mild intellectual disability with abnormalities such as short stature, unusual facial features, and small hands

- Bardet-Biedl syndrome (BBS): early-onset obesity associated with progressive rod-cone dystrophy, finger abnormalities, dyslexia, learning disabilities, and progressive renal disease
- Alstrçm syndrome (ALMS): mild truncal obesity associated with small stature, dilated cardiomyopathy and type 2 diabetes. It may also include hyperthyroidism, retinal cone dystrophy, progressive hearing loss, chronic nephropathy and hepatic dysfunction.
- Bçrjeson-Forssman-Lehmann syndrome (BFLS): by late childhood truncal obesity, severe intellectual disability, epilepsy, microcephaly, long ears, short stature, and gynecomastia
- Cohen syndrome (COH1): an autosomal recessive disorder that is overrepresented in the Finnish population characterized by mid truncal obesity, thin extremities and short stature.

Polygenic

Polygenic obesity results from the effects of several altered genes. Some examples include:

- peroxisome proliferator-activated receptor y gene (PPARG)
- ß2-Adrenergic receptor gene (ADRB2).
- ß 3-Adrenergic receptor gene (ADRB3)
- uncoupling protein (UCP) genes
- tumour necrosis factor-a gene (TNFA)
- angiotensin-converting enzyme gene (ACE)
- G protein ß 3 subunit gene (GNB3)
- leptin gene (LEP)
- leptin receptor gene (LEPR).

Screening/Diagnosis

The 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children describes an algorithm (see page four of the guidelines) for the screening, assessment and stepwise management of the overweight or obese adult (15).

Body Mass Index

Screening begins with a measurement of body mass index (BMI). BMI is an index of weight for height that is commonly used to classify underweight, overweight and obesity in adults. BMI is defined as weight (kilograms)/height (meters)^2 and is closely correlated (0.7-0.8) with body fat content in adults (16). If BMI is >25 and ≤35 kg/m^2, waist circumference should also be measured. If BMI is >25 kg/m^2 or waist circumference is above the ethnic differences cutoff points for waist circumference (17), then clinical and laboratory investigations are conducted to assess for comorbidities (blood pressure, heart rate, fasting glucose, and lipid profile). Screening for depression, eating and mood disorders should also occur (15).

There are several sources of BMI classification tables for obesity but they are much the same as the WHO classification and the Canadian Guidelines for Body Weight Classification in Adults (18).

A BMI calculator is available from PEN – Adult and Child.

Waist Circumference

Waist circumference (WC) provides an estimate of body girth at the level of the abdomen (19). The reproducibility of WC measurements is high (r = 0.998 for men and r = 0.999 for women) (19).

For additional information on ethnic-specific cut off values, see page 5 of the 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children (15) or Recommended Ethnic-specific Cut Off Values for Waist Circumference (17).

Body Mass Index, Waist Circumference and Body Fat

BMI and WC can also be used in combination. In 1998, the National Heart, Lung, and Blood Institute of the National Institutes of Health (NIH) in the U.S. published evidence-based guidelines (20). These guidelines included a classification system for assessing health risk based on anthropometrical measures of BMI and WC, based on the WHO Consultation of Obesity in 1997 (16,20). An independent indicator of health risk is distribution of body fat and an increased risk for cardiovascular disease and type 2 diabetes is associated with high waist circumference (21).

Assessing your weight and health risk from the National Heart, Lung and Blood Institute

Barriers

Expanding on the above elements of screening, it has been proposed that an assessment of barriers that could interfere with obesity treatment is important. If such barriers are not addressed, it may exacerbate feelings of failure, low self esteem and self efficacy in individuals with obesity. In addition, it is argued that addressing these barriers could save resources and increase the possibility of success in the long term (22).

Combining elements from the 2006 Canadian clinical practice guidelines with this concept of barriers, a screening methodology that addresses all of these has been proposed focusing on mental, mechanical, metabolic and monetary factors (the four Ms) (23).

- mental: mood disorder, anxiety disorder, attention deficit disorder, sleep disorder, personality disorder, addiction disorder, psychotic disorder, cognitive disorder
- mechanical: osteoarthritis, pain, reflux disease, obstructive sleep apnea, urinary incontinence, intertrigo, pseudotumor cerebri, plantar fasciitis
- metabolic: type 2 diabetes dyslipidemia, hypertension, non-alcoholic fatty liver disease, gall bladder disease, polycystic ovary syndrome, infertility, cancer
- monetary: education, employment, low income, disability, life/health insurance, bariatric furniture/aids, oversized clothing, weight loss programs.

Prevalence

Increased prevalence of overweight and obesity is occurring globally. The World Health Organization (WHO) states that "the global epidemic of overweight and obesity is rapidly becoming a major public health problem in many parts of the world" (16).

Prevalence from WHO data: http://www.who.int/mediacentre/factsheets/fs311/en/

Prevalence in Canada from Statistics Canada:
https://www.statcan.gc.ca/eng/help/bb/info/obesity

Prevalence in UK for the GOV.UK statistics:
https://www.gov.uk/government/statistics/statistics-on-obesity-physical-activity-and-diet-england-2017

Prevalence in Australia for the Australian Bureau of Statistics:
http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4338.0~2011-13~Main%20Features~Overweight%20and%20obesity~10007

Co-Morbidities/Associated Diseases

Complications Associated With Obesity from the Merck Manual
https://www.merckmanuals.com/en-ca/professional/nutritional-disorders/obesity-and-the-metabolic-syndrome/obesity#v886642

Medical Treatment

Including physical activity and behavioural interventions
https://www.merckmanuals.com/en-ca/professional/nutritional-disorders/obesity-and-the-metabolic-syndrome/obesity#v886921
See also Canadian Task Force on Preventative Health Care Guidelines for information on behavioural interventions.

Medications/Drugs

Drugs can be considered if the BMI ≥ 27 kg/m^2 with risk factors or BMI ≥ 30 kg/m^2 (24)
See: https://www.merckmanuals.com/en-ca/professional/nutritional-disorders/obesity-and-the-metabolic-syndrome/obesity#v886974

According to a review of pharmacotherapy in obesity management its success "depends on tailoring treatment to patients' behaviors and comorbidities and monitoring of efficacy, safety and tolerability" (24). For children and adolescents the bottom line of a Cochrane Review is that pharmacological interventions (metformin, sibutramine, orlistat and fluoxetine) may have small effects in reduction in BMI and bodyweight in obese children and adolescents. However, many of these drugs are not licensed for the treatment of obesity in children and adolescents, or have been withdrawn (25).

Bariatric Surgery
If all other weight loss attempts have failed, bariatric surgery may be considered for individuals with BMI ≥40 kg/m2, BMI ≥35 kg/m2 with severe co-morbidities, or BMI 30-34.9 kg/m2 with diabetes or metabolic syndrome (evidence is limited by the number of subjects studied and the absence of long-term data on benefits) (26). See Additional Content: Healthy Weight/Obesity - Bariatric Surgery Knowledge Pathway.

Nutrition Care Basics

See: Healthy Weight/Obesity Practice Guidance Toolkit.

Patient Permission Request
An obesity management tool published in 2012 by the Canadian Obesity Network advises health care providers to ask individuals for permission before discussing the issue of weight (27). The 5As of Obesity Management™ outlines five steps to approach weight management.

- ASK for permission to discuss weight and explore readiness
- ASSESS obesity-related risks and 'root causes' of obesity
- ADVISE on health risks and treatment options
- AGREE on health outcomes and behavioural goals
- ASSIST in accessing appropriate resources and providers.

When developing a dietary approach for weight management, it is important to note that there is not one single dietary approach that has been shown to be the most effective in promoting weight loss in adults with overweight or obesity (15).

Definitions
Intertrigo - inflammation produced by chafing of adjacent areas of skin (28).
Pseudotumor Cerebri - “a condition in which the pressure inside the skull is increased. The brain is affected in a way that the condition appears to be, but is not, a tumor.” Symptoms include headaches, blurred vision, dizziness, nausea and vision loss. This condition tends to occur “more often in women than men, especially in young obese women 20 to 40 years old. It is rare in infants, but can occur in children” (29).

Key Resources for Professionals
Clinical practice guidelines, web links and other professional tools and resources can be found under the Related Tools and Resources tab. Use the Audience, Country and Language sort buttons to narrow your search.

Other
The University of Alberta developed a new classification system for screening for obesity to determine level and method of intervention with regard to reducing health

risks and mortality called the Edmonton Obesity Staging System (EOSS) (30). The EOSS ranks individuals with excess body fat on a five-point scale and includes obesity-related co-morbidities and functional status as part of the assessment (31). Since it was developed in 2009 there have been a number of studies to validate it in both adults and children. This study concludes that EOSS can be useful for pre-surgical stratification and risk assessment of obese patients in clinical practice (32).
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