



*The Global Resource
for Nutrition Practice*

PEN: Practice-based Evidence in Nutrition®

PEN® Writer's Guide

March 23, 2015

Table of Contents

1.0 Forward	4
2.0 Introduction to PEN: Practice-based Evidence in Nutrition®	6
2.1 What is a Knowledge Pathway? – Definition and Scope	6
2.2 Criteria for Inclusion of Materials in a Knowledge Pathway	6
2.3 Selecting Topics for Knowledge Pathway Development.....	7
3.0 Getting Started	8
3.1 Introduction to the Evidence-based Training	8
3.2 Understanding an Evidence-based Process	8
3.3 Review of the Evidence-based Process	8
STEP 1 - Assess	8
STEP 2 - Ask.....	8
STEP 3 - Acquire.....	9
STEP 4 - Appraise.....	11
STEP 5 - Apply	12
3.4 Review Process of PEN® Content.....	13
3.5 Revising Knowledge Pathways.....	13
4.0 Knowledge Pathway Template	14
4.1 Knowledge Pathway - Practice Categories.....	14
4.2 Question Sub-Categories.....	14
4.3 Key Practice Points (KPPs)	15
4.4 Evidence.....	16
4.5 Comments	18
4.6 Rationale	18
4.7 Glossary	19
4.8 Background.....	19
4.9 Evidence Summary.....	19
4.10 Practice Guidance Summary or Toolkits	20
4.11 Related Tools and Resources (TR).....	27
4.12 Related Knowledge Pathways.....	29
4.13 Other links	29
4.14 References	29
4.15 Other PEN® Related Written Content	29
Social Media.....	29
News Making Evidence	30
Evidence Clips	31
5.0 Appendices.....	32
Appendix 1 PEN® Author Waiver (sample).....	33
Appendix 2 PEN® Writer's Checklist.....	38
Appendix 3 Guidelines for Knowledge Pathway Reviewers.....	39
Appendix 4a Practice Categories and Knowledge Pathway Template	46
Appendix 4b Knowledge Pathway Template	47
Appendix 5 Evidence Grading Checklist.....	48
Appendix 6 Sources of Answers.....	52
<i>Examples of Sources of Answers to Background Questions.....</i>	52
<i>Examples of Sources of Answers to Foreground Questions.....</i>	52

Appendix 7	When Less is More	53
Appendix 8	Search Strategy Worksheet.....	54
Appendix 9	Selected User Guides to the Medical Literature	58
Appendix 10	Plagiarism Guidelines	69
Appendix 11	Abbreviations	70
Appendix 12	Metric System Equivalents for Units of Measure.....	71
Appendix 13	PEN Partner Country Differences.....	73
Appendix 14	Glossary.....	76
Appendix 15	Background Template – Disease-Related Topic.....	77
Appendix 16	Background Template – Non Disease-Related Topic	80
Appendix 17	Toolkit Template.....	82
Appendix 18	PEN® Guidelines for Third Party Tool/Resource (TR) Approval.....	90
Appendix 19	Link to PEN® Orientation Tutorial.....	92
Appendix 20	PEN® Style Guide	93
1.0 Forward	.....	2
2.0 Introduction	.....	4
3.0 Writing Knowledge Pathways	.....	4
4.0 Knowledge Pathway Format	.....	4
4.1 Font.....		5
4.2 Spacing		5
4.3 Headings		5
4.4 Bullets		5
4.5 Key Grammar Tips		6
4.6 Pathway References		9
5.0 Appendices	.....	12
Appendix I - PEN® Key Word Determination Framework	.....	12

1.0 Forward

PEN® has a series of manuals or “How-To” Guides for new and seasoned PEN users and administrators, each designed as a comprehensive reference on a specific application. Each document provides the foundation for developing a common understanding and approach that maintains the integrity, consistency and excellent standards required for the PEN® service. This guide is one in a series of guides including:

- Content Management Guide
- Cross Portal Resource Sharing Guide
- Cute Editor Style Guide
- PEN® Portal Handouts - User Guide
- Copyright Management Guide
- Glossary Management Guide
- PEN® Corporate Identity Style Guide
- PEN® Style Guide
- PEN® Standard Entry Guide
- PEN® Toolkit Writer’s Guide
- PEN® Writer’s Guide
- Portal Consumer Resource Development Guide
- Resource Distribution Fulfillment Guide
- Search Management Guide

What is PEN®?

Practice-based Evidence in Nutrition® [PEN] is an evidence-based decision support service developed by Dietitians of Canada (DC) and launched in the fall of 2005. Thought leaders from the dietetic profession, knowledge translation and evidence-based decision-making and technology were consulted and engaged in the conceptualization, design and implementation of PEN. Review the impressive list of contributors at <http://www.pennutrition.com/contributors.aspx>.

Designed to support busy dietitians and other health professionals to keep pace with the vast amount of food and nutrition research available, PEN® enables them to be knowledge managers through ready online access to trusted and credible practice guidance based on questions arising in everyday nutrition practice.

Recognized authorities on each topic addressed in the PEN® system, identify the relevant literature from filtered and original sources and critically appraise, grade and synthesize that literature into key practice points which answer the practice questions. Additionally, client resources and other tools that are congruent with the evidence are included in PEN® to support practice, along with backgrounds, evidence summaries and toolkits.

The PEN® database is dynamic, constantly being updated in response to new practice questions submitted by users and new evidence that directs a change in current practice. The PEN® service is available as an individual or group license or through a site license for larger groups. A customized application has also been designed to support dial-a-dietitian contact centres (CC-PEN®). PEN currently serves as the knowledge repository for three provincial dietitian contact centres (British Columbia, Manitoba and Ontario; each providing support to PEN® through contractual collaborative agreements). The PEN service is now governed by a collaborative partnership comprised of the British Dietetic Association, the Dietitians Association of Australia and Dietitians of Canada. Other national dietetic associations have joined as partners including Dietitians New Zealand, the Irish Nutrition and Dietetic Institute and The Association for Dietetics in South Africa.

How Does Contact-Centre PEN® [CC-PEN] Differ from PEN®?

PEN® uses a powerful search engine designed to retrieve search results quickly and efficiently. This quick response is needed to support the busy practitioner and dietitians in contact centres who are working under even more limited time constraints, often with only a few minutes to identify a caller’s needs and answer their questions. CC-PEN® provides access to all the regular PEN® content and tools as well as counselling tools and standardized responses for quality assurance. The PEN® database has an impressive track record, meeting over 90% of caller inquiries.

Other unique features of CC-PEN® include customization of advice according to geographical jurisdiction, branding of client materials, automated resource distribution and tracking, community referrals using geo-mapping, alert management and data collection and reports.

Unique Views of PEN®

PEN® has three unique “views” providing access to differing tool sets based on one’s security permission:

- a tool set to access the knowledge base and customize, print and email client/professional resources - applies to individual, group and site licensees
- a tool set to support CC-PEN® users - for contact centre applications
- a tool set to manage the content of the knowledge base - for administrators.

You will find out more about these unique views and how to use the customized tools in each of the User/Administrator Guides.

Supporting dietitians’ professional development and providing access to evidence-based standards and tools to sustain the profession and promote sound decision-making is a consistent priority for dietetic associations around the world.

PEN® Writer’s Guide

The PEN® Writer’s Guide has been developed to provide guidance to writer’s of content for the PEN® database. It provides information on process, examples of the various components of knowledge objects found in a Knowledge Pathway (Practice Questions, Background, Toolkit, Related Tools and Resources) and forms and templates to use. In addition it provides the forms authors need to sign before beginning the writing process and when submitting content for review. **See Appendices 1-3.**

All PEN® authors are required to complete an intellectual property waiver, the purpose of which is to warrant that the author has not plagiarized the work of any other person in preparation of the content for PEN® and to assign the intellectual property and moral rights of the work to DC.

In order to be transparent regarding any real or perceived conflicting interests that may be seen to influence the content in PEN®, all PEN® authors and reviewers are required to complete a **Declaration of Affiliations and Interests Form** that is kept on file with DC.

2.0 Introduction to PEN: Practice-based Evidence in Nutrition®

2.1 What is a Knowledge Pathway? - Definition and Scope

The **PEN®** service was designed using a knowledge path approach, each knowledge pathway (**KP**) related to a topic from the broad scope of the dietetics field (clinical, consulting, education, food service management, community nutrition, professional issues, etc.). Experts are appointed to develop each KP according to a prioritized list and time line.

A KP consists of succinct guidance statements and practice recommendations synthesized from the literature, supported by more detailed levels of carefully selected references, practice guidelines, position papers, and links to websites, electronic publications, databases and discussion groups as well as client education tools when applicable. While some of the evidence-based content, care maps, tables, etc. from the former Manual of Clinical Dietetics were used, they were reviewed and updated as necessary. Tables, calculators, algorithms are also included. Each KP grows in breadth and depth over time as evidence that informs practice changes. In addition, new KPs can be easily added as the need and interest for those topics arises.

A KP provides the flexibility to enable the busy practitioner to quickly find the short answer to a specific question, as well as to “drill down” to review the evidence in more detail, when time permits. The breadth and depth of a KP will vary depending on the topic.

A template has been developed to provide a framework from which to begin developing your KP. (**Appendix 4 a and b**) In addition, guiding principles regarding evidence-based decision making and tools such as the Evidence-based Tutorial will also assist you in selecting and synthesizing the information for the KP. [See **Getting Started - page 8** for more information].

2.2 Criteria for Inclusion of Materials in a Knowledge Pathway

To be included in a knowledge path, materials must meet the following criteria:

- Accuracy - Information contained in the knowledge path selections must be accurate, verifiable, and peer reviewed.
- Authority - selections must be from an authoritative source. Where recommendations rely on expert opinion this too must be clearly stated so that practitioners understand the strength of the evidence supporting a particular guidance statement.
- Objectivity - selections must be science-based, evaluated and graded according to recognized standards of evidence. See **Appendix 5**
- Currency - the most recent evidence from peer reviewed articles or websites where content is reviewed at least annually should be used. An older item may be considered if no newer information or research exists or it sets the foundation for future research (e.g., a Surgeon General's report) or stands the test of time. Knowledge pathways will be reviewed and updated on a regular basis which ensures the **PEN®** service is dynamic and up-to-date.
- Scope - selections must specifically address the knowledge path topic and, where appropriate, should encompass the continuum of health promotion/protection; disease prevention; treatment/intervention; rehabilitation and support. Resources that describe and/or evaluate programs and/or discuss "lessons learned" are particularly helpful to the professional community of practice and should be included in each knowledge path. Succinct practice statements will have embedded links to more detailed information allowing users to dig into the information for more detail.

- Access - websites and other electronic resource selections must be easily accessible (i.e. no charge) and navigable. If not and the selection is essential to the path, we'll add navigational tips for the user. Any instance where a web site or reference requires a fee to access it, it must be discussed with the project coordinator and every effort will be made to identify an alternate resource.
- Language - while the content of PEN® is available only in English, if there are resources available in other languages that meet the above criteria and are in accordance with the evidence then they should also be included as a link or a PDF file.

2.3 Selecting Topics for Knowledge Pathway Development

The number of KPs continues to grow over time. The PEN® team uses member input from the “submit a practice question” feature on the PEN® site, feedback from the dietitian call centers which utilize PEN® as their database (Dial-a-Dietitian in BC and Dietitian Advisory Service in Ontario), and the criteria adapted from a practice guideline scorecard developed by P Splett¹ to help establish which pathways or questions will receive immediate priority.

To what degree would the KP:

- Improve client outcomes
- Affect a large patient/client population
- Affect high incidence condition or problem
- Affect vulnerable population groups
- Reduce costs
- Build scientific bases linking nutrition to positive outcomes
- Improve performance or enhance confidence of practitioners
- Affect policy decisions.

¹ Splett, PL. Developing and Validating Evidence-Based Guides for Practice. Chicago, IL: American Dietetic Association; 2000.

3.0 Getting Started

3.1 Introduction to the Evidence-based Training

PEN® will provide training on critical appraisal and evidence synthesis as needed. For those who are self-learners we have developed five training modules to help you learn about the evidence-based process used in PEN®. They are accessible from the PEN® Home page - under [Key / Useful / Quick Links](#).

PEN® Writer's Training Modules

- [Evidence-based Process Module](#)
- [Appraising the Literature Module](#)
- [Asking the Question Module](#)
- [Quick Review of Study Designs Module](#)
- [Searching PubMed Module](#)

3.2 Understanding an Evidence-based Process

The concept of knowledge pathways is relatively new and strives to broaden our thinking about information; how we obtain it, evaluate it and use it. We know there is **NO shortage of information!** PEN® is designed to distill the mountains of information into digestible bottom line practice guidance statements or key practice points that have been developed based on a critical appraisal of **relevant** studies, or evidence. Users can click on links to obtain more information on the evidence supporting the key practice points.

3.3 Review of the Evidence-based Process

The Evidence-based Process is: Assess, Ask, Acquire, Appraise and Apply. To help you construct your knowledge pathway using this evidence-based approach, we will go through each part of the Evidence-based Process with some examples and recommendations of evidence-based resources.

STEP 1 - Assess

Think about the topic, the knowledge pathway template and the kinds of information RD's will be looking for under each heading. Consider the types of decisions to be made, where there is controversy or new information. The PEN® Content Manager may be able to assist you in soliciting feedback or input regarding desirable or important issues to be addressed within a particular KP.

STEP 2 - Ask

Frame the kinds of information you have identified in Step 1 into searchable questions. Taking time to develop a "good" question will help you define what to look for and where to look. There are two types of questions - *background* questions and *foreground* questions.

Background questions are often of a general nature and relate to a condition. Questions that pertain to a description of a disease, its etiology, prevalence, incidence, course etc. would be background questions.

Foreground questions generally relate to more specialized knowledge that addresses issues of care, or decision making. Foreground questions usually ask about treatment, prevention, prognosis or diagnosis. We would like writers to give more attention to *foreground* questions.

Here are some examples of practice-based questions that dietitians are seeking answers to. They would need to be refined in order to conduct an effective search of the literature to answer them (see PICO below)

- What is an acceptable gastric residual volume when tube feeding?
- Is it safe to use blue dye in enteral feeds?
- Should institutions still use meal patterns for diabetics?

- Closed versus open enteral systems - what is the best option?
- How does one implement a HACCP program in a tube feed area?
- Are disease-specific enteral products effective?
- What staffing models are available for dietitians?
- What equations should be used to calculate energy requirements (Harris Benedict, Mifflin)?
- What strategies are effective in reducing childhood obesity?
- Do patients with diabetes mellitus benefit from lower CHO/higher fat enteral formulas?
- What ethical guidelines on “artificial” feeding exist for helping decide whether to begin, withhold, or withdraw tube feeding?
- Does early tube feeding improve outcome from acute stroke?
- In the adult population with decubitus ulcers, does a zinc supplemented diet compared to a standard diet result in an improved rate of healing?
- In the critically ill adult population, does early enteral feeding compared to delayed feeding result in a shorter length of hospital stay?

Creating a clear structured question makes finding evidence easier. PICO is an often used format:

P Population - who are the relevant patients, clients or groups
 I Intervention or exposure
 C Comparison or control
 O Outcome (what are the patient, client or group-relevant consequences of the exposure that we are interested in.)

Examples

P Do patients with ileostomies...
 I who consume a high fibre diet (>20g)...
 C compared to those who consume a low fibre diet (5-10g)...
 O have a higher incidence of ostomy blockage?

P Do school-aged children
 I who watch media (TV, computer) > 15hours/wk
 C compared to children who watch media less than 15 hours/wk
 O have a higher incidence of overweight (defined by BMI for age >95th percentile)?

Using PICO to create your question will also assist you in identifying the most relevant studies to summarize in the evidence statements. For instance, if your question relates to patients with ileostomies, including studies that only examined patients with colostomies may not be appropriate.

STEP 3 - Acquire

Background questions can be answered using existing materials and usually become part of the *PEN* Background document. Much of this material already exists in other tools and resources and we encourage you to link to these sources wherever possible for background material pertaining to your KP topic. In other words, you don't need to re-write this information where it already exists and is easily accessible at no cost. Note: It is still necessary to evaluate the reliability, currency and accuracy of resources providing background information. See **Appendix 6** for some examples to get you started. In rare cases where a topic is new to the profession, background questions may be part of the question and answer section of *PEN*®, Once the topic is more familiar then these questions will be moved to the Background document.

Foreground questions are usually answered with reviews of studies or individual studies. The type of question (e.g. a treatment, prognosis or diagnosis question) will determine the evidence you use to answer the question. For example, treatment questions are best answered using systematic reviews of randomized controlled trials (RCTs) and if a systematic review has not been published, by single RCTs; while prognosis questions are best answered by systematic reviews of cohort studies than by a single cohort study (see <http://www.cebm.net/index.aspx?o=1025> for more about levels of evidence to answer foreground questions).

To find the evidence, writers are encouraged to follow a hierarchy of evidence to answer questions.

1. Go to quality sources of pre-filtered or pre-processed information from ‘system’ resources or ‘synopses’ resources, such as National Guideline Clearinghouse, Clinical Evidence, HealthEvidence, Trip Database etc. (See **Appendix 6**).
2. If evidence cannot be found from these resources or the evidence is not current and needs to be updated, it is then recommended the writer search for systematic reviews or health technology assessments in databases, such as The Cochrane Library www.thecochranelibrary.com; or search in PubMed for systematic reviews using a ‘clinical query’ search (see **Appendix 6** for more about clinical queries in PubMed or visit the PubMed Tutorials at <http://www.nlm.nih.gov/bsd/disted/pubmed.html>).
3. If evidence can still not be found or needs to be updated, then a search in the ‘traditional literature’ for individual studies is necessary. RCTs can be found in CENTRAL http://www.mrw.interscience.wiley.com/cochrane/cochrane_clcentral_articles_fs.html (a Cochrane database of clinical trials) or from a search in PubMed using a ‘clinical query’ for *therapy*. For *prognosis* or *diagnosis* questions, cohort and case control studies can be found in PubMed using the ‘clinical queries’ for *prognosis* or *diagnosis*.

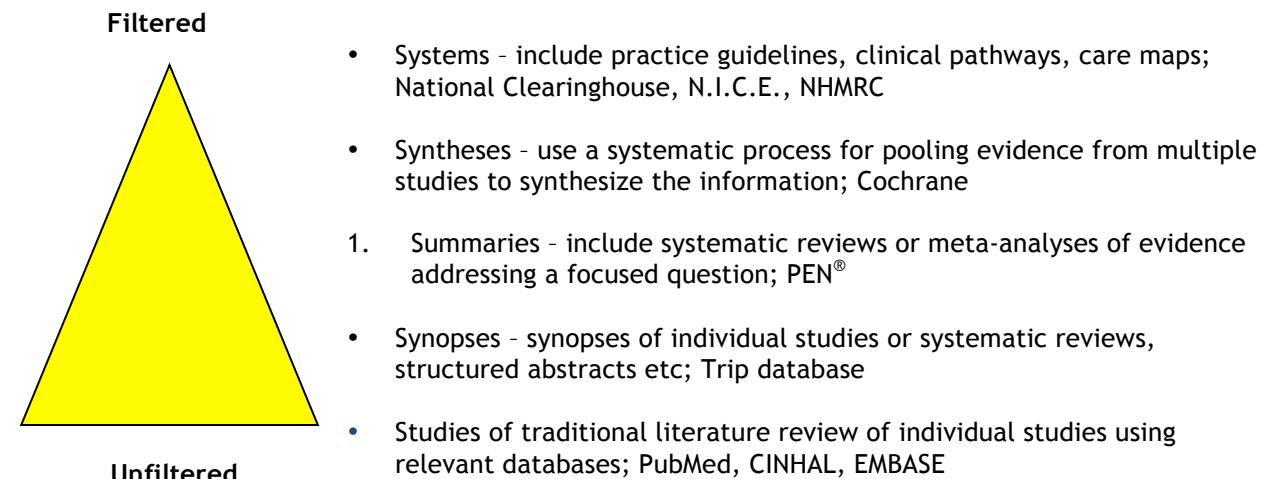
As indicated above, if the pre-filtered information or systematic reviews are not current then a search for more recent articles should be conducted and the new studies reviewed and added to the pre-filtered or synthesized evidence.

More information on this approach is contained in an article entitled: *When less is more: A practical approach to searching for evidence-based answers*” in **Appendix 7**.

Hierarchy of Evidence

It is important to follow the hierarchy of evidence (next page) for each type of foreground question to ensure a valid evidence-based answer and to avoid additional work. In the case of a therapy question, if you have a current systematic review that answers your question, then it is not necessary to look for individual studies. Also, if there are no systematic reviews but a well designed RCT (randomized controlled trial) answers the question then you will not need to look for other epidemiological studies, such as cohort studies to support the answer. For example, if a relationship between rheumatoid arthritis and omega-3s is suspected, and there is a large well-designed randomized controlled trial that shows that there isn’t a relationship, there is no need to look at cohort or case control studies for evidence. If there is a good cohort study and a poor RCT - generally the evidence would still be according to the results of the RCT.

Hierarchy of Evidence (CHE – Evidence-Based Decision Making Tutorial 2008)



Searching multiple databases can be tedious; if you have access we would highly recommend using the TRIP database. The TRIP database is a large search engine that searches multiple databases, including guidelines from many international associations; synopses from many reputable services; health technology assessments and systematic reviews from NICE, Canadian Coordinating Office for Health Technology Assessment (CCOHTA) and The Cochrane Library; electronic textbooks; and, individual studies from PubMed. All search results are organized according the hierarchy of evidence. Searching this database can provide a ‘one-stop-shopping site’.

When searching for evidence, document your search strategy including:

- Inclusion and exclusion criteria (timelines, languages, age, human vs. animal, types of studies or interventions etc)
- Actual search terms or specific questions using “PICO” format
- See **Appendix 8** for worksheets on recording your systematic search strategy.

Grey Literature

Determine which databases, websites, and approaches provide relevant **grey literature**. In this context, grey literature refers to non peer reviewed but still credible sources of information such as publications issued by government, academia, business, and industry, in both print and electronic formats, but not controlled by commercial publishing interests, and where publishing is not the primary business activity of the organization. Scientific grey literature comprises newsletters, reports, working papers, theses, government documents, bulletins, fact sheets, conference proceedings and other publications distributed free, available by subscription, or for sale.

For further info see http://hlwiki.slais.ubc.ca/index.php/Grey_literature and “Grey-Matters: A Practical Search Tool for Evidence-Based Medicine” available from: <http://www.cadth.ca/en/resources/finding-evidence-is/grey-matters> (accessed 2014 Oct 30).

Writers are encouraged to limit themselves to government, research and credible non-government organization (NGO) websites (such as professional associations, universities, health organizations etc.) to locate pertinent grey literature.

NB - we generally recommend a focus on human studies, English language*, and current information. An older item may be considered if it sets the foundation for future research (e.g., a Surgeon General's report) or if no newer information on the issue is available. *If writer/contributor is bilingual, we encourage utilizing materials published in other languages, however, funding for translation is extremely limited.

STEP 4 - Appraise

Using the Evidence Checklist in **Appendix 5** and the worksheets in **Appendix 9**, appraise your materials to establish the quality of the evidence related to your questions. If you are feeling your critical appraisal skills are rusty, or want to gain a better sense of how to effectively use the worksheets, review the relevant sections in the two Writer's Training modules:

- [Evidence-based Process Module](#)
- [Appraising the Literature Module](#)

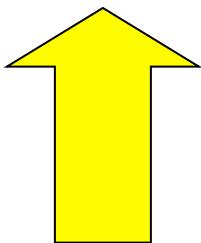
From time-to-time there may be a situation where there is no evidence to support a known fact. In this case we refer to the fact as a truism which is defined as “an un-doubted or self-evident truth” (Source: <http://www.merriam-webster.com/dictionary/truism>). An example may be “Boiling water coming into direct contact with human skin will burn the skin.” Even though, the only evidence available for this may be case reports and anecdotes, the physiological rationale and basic science would support this as a truism and warrant a higher evidence grade.

Take the following scale into consideration when doing your appraisal:

Research Ratings Scale

Hierarchy of Study Designs (CHE - Evidence-Based Decision Making Tutorial 2009)

Results may be more valid or believable



- N of 1 randomized controlled trials
- Randomized control trials
- Cohort studies
- Case-Control studies
- Cross-sectional analytic studies
- Ecological studies
- Case series
- Case reports

Results may be less valid or believable

STEP 5 - Apply

Summarize the results of your reviews into key practice points and integrate them and the PQ into the appropriate sections of the KP template. Make each practice point relevant to our audience by using the concepts of validity, importance and applicability.

Validity - Can I trust the information? (state the source, level of evidence using PEN® grade levels)

Importance - Will the information make an important difference to my practice? (Are the outcomes ones practitioners or clients would care about?)

Applicability - Can I use this information in my practice setting? (consider access or cost issues etc) or with my patients/clients

Writing content for PEN® means following guidelines for professional ethics and integrity. One of the many aspects of professional integrity is acknowledging the work of others that one uses in their own written work. Lack of proper acknowledgement is plagiarism which is considered a serious misconduct both in the academic and scientific worlds. If you are not certain if something you have written could be considered as plagiarism, please discuss it with a member of the PEN® team. See **Appendix 10** for further information on plagiarism.

Authors should review the PEN® site to see examples of well-written key practice points (KPP).
www.pennutrition.com.

Here are some examples to get you started:

<http://www.pennutrition.com/KnowledgePathway.aspx?kpid=3043&pqcatid=144&pqid=3092>

<http://www.pennutrition.com/KnowledgePathway.aspx?kpid=7406&pqcatid=144&pqid=7376>

3.4 Review Process of PEN® Content

External Review

Each evidence analyst/writer is assigned a member of the PEN® team to provide mentoring during the writing process. Once the PEN® content has been drafted, the author should review the PEN® Author Waiver (Appendix 1), Writer's Checklist (Appendix 2) and Guidelines for Knowledge Pathway Reviewers (Appendix 3) to make certain the content is ready for review. The assigned PEN® team member will provide preliminary feedback. When it is determined that the content is ready for external review, the PEN® team member will send out the content in a WORD document to identified external reviewers. Sometimes authors suggest reviewers, but most times it is the PEN® team who identify the reviewers with expertise in the topic area both from academia and practice. This is a critical stage in the KP development as it adds credibility to what is written in PEN®. Either the PEN® team member or the author shall ensure that the WORD document contains information on the reviewers, including email address and country of origin. If the author is new to PEN® writing then the PEN® team member is to ensure a brief Bio on the author is submitted with the final WORD document.

Editing

Once the evidence analyst/writer has incorporated all of the reviewers' feedback, the MS WORD document is ready for the PEN® Editor who ensures that the content is consistent, grammatically correct and that it reads well. The PEN® Editor also checks for plagiarism (see Plagiarism Guidelines Appendix 10), the use of abbreviations (see Appendix 11), for metric system equivalents for units of measure (see Appendix 12) and formatting and style (see Appendix 20 - PEN® Style Guide). If needed, the PEN® Editor or the PEN® team member who is mentoring the writing of the content will discuss any issues or clarifications needed with the writer/evidence analyst.

3.5 Revising Knowledge Pathways

On a regular basis, frequency depends on volume of new research on the topic, or at least every two to three years each KP is revised. Revision involves:

- creating an MS WORD document - this will be created by a member of the PEN® team. The document includes the KP content and any related questions. The PEN® Editor will add comments to the related questions section indicating which questions need to be reviewed for consistency with updated content. The author is to flag any inconsistencies with the PEN® team mentor.
- reviewing existing questions, **Note:** if an author would like to eliminate a PQ or change the wording of the PQ (the question itself, not the content), there needs be dialogue and approval from the PEN® team member who is mentoring them in revising the KP. Some questions are linked to more than one KP.
- searching for and incorporating new literature on the topic into the KPPs and Evidence Statements
- answering new questions on the topic
- updating the Background document and Toolkit (or Practice Guidance Summary (PGS))
- reviewing Related Tools and Resources (TRs), recommending removal of those that no longer match the evidence and recommending new ones

4.0 Knowledge Pathway Template

The PEN® Style Guide (Appendix 20) has been developed to help you create your content in a standardized way. It includes a Knowledge Pathway template, plain language tips, acceptable fonts, key grammar tips, spelling and the correct way to cite pathway references among many other important format issues. As you review the following section you'll find it is helpful to have the template (Appendix 4b) handy to refer to.

Note: If you are developing new content, you can also ask member of the PEN® team for the blank WORD KP template.

4.1 Knowledge Pathway - Practice Categories

Think about your KP topic and which practice category it fits into:

- Population Health / Lifecycle
- Health condition / Disease
- Food / Nutrients
- Professional Practice

Some topics may fit into more than one practice category e.g., Healthy Weights / Obesity will likely fit into both the Population Health / Lifecycle (obesity prevention) and the Health Condition / Disease (treatment of obesity). Contrast this with Celiac Disease. Here, there is likely not a Population Health / Lifecycle component and screening, therapy and counseling etc. could all be addressed under the Health Condition / Disease practice category. To view the current PEN® KPs classified under the four practice categories, go to <http://www.pennutrition.com/TOC.aspx>. Select the practice category that most closely suits your KP topic and focus on the sub-categories to organize your questions.

4.2 Question Sub-Categories

Health Promotion / Prevention - questions in this category relate to efficacy of health promotion or disease prevention activities or interventions; content may define or illustrate population health approaches including capacity building social marketing, etc.

Assessment / Surveillance - who should be assessed or screened, when, how, and why are the types of questions addressed here (they should be grounded in evidence and ideally tied to outcomes, not simply common or desirable practice).

Intervention - questions relating to effective program planning as well as nutrition interventions or therapy would be addressed in this sub-category.

Evaluation / Outcome Indicators - questions in this section might relate to cost effectiveness, best practices, evaluation strategies, outcomes of interventions or validity of particular outcome measures.

Education - questions addressing effectiveness of specific types of education/counselling or education programming would be addressed in this sub-category.

We ask authors to think about all aspects / knowledge objects (questions - Key Practice Points, Comments, Rationale; Background; Toolkit and Tools and Resources) as they develop their KP to ensure all that is needed to guide practice has been included. In addition, we encourage you to think about the simplest, most time effective way of presenting the practice guidance for busy dietitians to use. How do dietitians look for information, what kinds of things do they need? Remember, dietitians don't necessarily need more information; they need it organized, prioritized, evaluated, synthesized and accessible!

4.3 Key Practice Points (KPPs)

Authors should carefully develop KPPs. Generally there will be two parts to the KPP: **Evidence Synthesis and Practice Guidance**. Supporting research and/or evidence is provided in the Evidence Statements and additional details are provided in the Comments or Rationale sections. If the Evidence Synthesis is very practical, e.g. where there is a lack of scientific evidence and expert opinion is used, there may not be a need for the Practice Guidance section.

- **Evidence Synthesis (ES)** should consist of clear statements reflecting the evidence used to answer the question. Simple language should be used when possible. Supporting research and/or evidence is provided in the Evidence Statements.

When crafting the ES, consider including the following information (as summarized from the evidence):

- study design
- population (if guidance targets a specific group, e.g. age, gender)
- key conclusion/answer to the practice question - specify amounts if applicable e.g. x amount of a supplement daily
- limitations of the evidence may be included if critical, in this case they would also be included in the evidence statements
- future research needed/suggested if critical to clarify or enhance the understanding of the issue (either here or in the Comments section).

Evidence syntheses are given a Grade of Evidence using the PEN® Evidence Grading Checklist (Appendix 5). Note that if conclusions in the evidence synthesis have more than one grade of evidence, the grade should be indicated after each conclusion.

In some cases, rewording the question to include the population supported by the evidence may be warranted.

Information from the Evidence Synthesis section will be used in the Evidence Summary.

- **Practice Guidance (PG)** includes the more practical information needed to answer the practice question and guide practitioners. Its content can be derived from the Evidence Synthesis, Evidence Statements, Comments and Rationale sections but every effort should be made to use clear and simple language. It will usually indicate what to consider in discussion with clients. A grade of evidence is not applied to this section. The PG can include:
 - context for the topic / issue (can include brief rationale or reasoning)
 - recommendation/conclusion
 - Some information from the Evidence Synthesis may be repeated here.
 - A few words to reflect the quality of the evidence informing practice guidance (e.g. “limited evidence suggests...”). Use wording consistent with PEN’s Evidence Grading Checklist (Appendix 5)
 - additional practical information such as risk/benefit ratio, convenience and burden, costs, nutrient information, patients’ value and preferences, health status, co-morbidities, lifestyle, culture etc.
 - links to standard international collections (http://www.pennutrition.com/international_guidelines_collection.aspx) that help guide practice, as appropriate to the topic, such as Healthy Eating Guidelines and Dietary Reference Values.

Information from the Practice Guidance section will be used in the Toolkit.

When discussing specific nutrient requirements or healthy eating guidelines in a KPP and there are known partner country differences, link PEN® users to the appropriate collection in the International Guideline Collections: http://www.pennutrition.com/international_guidelines_collection.aspx

Examples of clear, succinct KPP's incorporating one of the International Guideline Collections:

Observational studies have evaluated a number of foods, nutrients or dietary factors and risk of developing rheumatoid arthritis (RA); however most results have been inconclusive. At the present time, no specific food, nutrient or dietary factor is recommended to consume or avoid to decrease the risk for developing RA. It is recommended that all individuals should strive to meet their nutritional needs by following [Healthy Eating Guidelines](#).

4.4 Evidence

Be as succinct as possible when summarizing and critically appraising the evidence (systematic reviews, primary research, position papers, guidelines etc.) into evidence statements. Include the following information:

- type of publication e.g. review, study, practice guideline
- year - not required but if the evidence is a systematic review include the dates of the literature reviewed; better to use the actual year than an adjective such as "recent"; if the evidence is from several Clinical Practice Guidelines (CPG) from different countries and different years then indicate the year of publication of the CPG.
- population studied - including key inclusion/exclusion criteria relevant to the question
- number of subjects - refer to them as subjects, clients, individuals, **not** patients
- methods and interventions
- main findings - include odds ratio (OR), relative risk (RR), hazard ratio (HR), P-value etc and Confidence Intervals (CI) when appropriate e.g. when the question relates to risk. Only need to report on those that are relevant / primary outcomes relating to the PQ.
- author's main conclusions
- limitations noted in the cited article - should be distinguished from those identified by the PEN® author. Ensure the reference number is at the end of the sentence where the article author's limitations are discussed. A transitional statement or phrase can help, e.g. The following limitations have been identified by the author of the study.... and additional limitations to note are.....
- conflict of interest - comment if obvious e.g. identified by the author of a systematic review. Since it is not mandatory for authors to report conflict of interest in all publications, it is not always possible to establish whether or not conflict of interest is present).
- source of bias - e.g. if there is only one research group who has published all of the evidence
- the number of the reference in brackets is to be used, not the author's name and publication year.

Evidence statements are not just a summary or a paraphrase of the article abstract. Authors should summarize the study and results and put them into context for the reader using their critical appraisal skills. This contextualization can occur through the evidence statement, the comments section, and rationale.

Occasionally, an evidence summary table can be attached to the KP as a tool if the data and topic area necessitate it (e.g. large body of controversial evidence, with some similarities in study design). A standard table with basic headings should be used. Columns/headings can be added as needed. The decision to use an evidence summary table should be discussed with your PEN® team mentor.

Example

Ref #	Study design	Population	Baseline measures	Interventions/ Treatment/ exposure	Comparisons/ control	Outcomes	Comments / Limitations
1	Multi-center, randomized, controlled, open trial.	129 F, 98 M, BMI=26 ² kg/m ² , ~65 years, generally healthy	≤1.5 servings/day dairy products, 690±234 mg/day	Regular diet plus 3 8-oz servings low fat milk daily = ~1404±296 mg/day Ca2+ 12 wks	. Regular diet (control) =~690±234 mg/day Ca2+	Wt ↑ over time both groups, but significantly more weight gain with extra milk (~0.6 kg).	Intake was ~100 kcal/day more with extra milk ingestion as per 3-day food diaries at BL, weeks 8 & 12. Good compliance as per daily milk intake logs. No intention to treat analysis reported.

Table abbreviations

~ = approximately, BL= baseline, BMI= body mass index, Ca²⁺ = calcium, F= female, g= gram, kcal= kcalorie(s), kg= kilogram, M= male, m= meter, mg= milligram, oz= ounce, PA= physical activity, RCT= randomized controlled trial, wks= weeks, wt= weight

References

- 1 Barr SI, McCarron DA, Heaney RP, Dawson-Hughes B, Berga SL, Stern JS, et al. Effects of increased consumption of fluid milk on energy and nutrient intake, body weight, and cardiovascular risk factors in healthy older adults. J Am Diet Assoc. 2000 Jul;100(7):810-7. Abstract available from: <http://www.ncbi.nlm.nih.gov/pubmed/10916520>

Examples of clear succinct evidence statements:

Systematic Review (example)

- 4.15 A systematic review (including studies published up to 2003) examining the role of diet or biological markers in the development of rheumatoid arthritis (RA) identified 11 studies (14 articles): five case-control and three cohort studies of diet, and three case-control studies of serum biomarkers (1). The authors summarize results of specific foods or nutrients and their association with RA as follows:
- Oils and fish: Three case control studies were identified, two studies found that higher consumption of fish was associated with decreased RA risk; however in one study of U.S. women this was found for broiled or baked fish only and the association was stronger in cases who tested positive for rheumatoid factor (seropositive RA) compared to negative cases (2). Two studies from Greece reported that higher olive oil consumption was associated with reduced risk of RA.
 - Fruits, vegetables and antioxidant vitamins: Two case-control and one cohort study were identified, which showed that higher intakes of fruit, cooked vegetables and cruciferous vegetables were associated with reduced RA risk. In two of these studies, beta-cryptoxanthin and vitamin C were also found to be protective.
 - Coffee, tea and caffeine: Three cohort studies found mixed results, with one study from Finland showing coffee consumption was associated with an increased RA risk in individuals with seropositive RA; however the Iowa Women's Health Study of 55-69 year-old women showed an increased RA risk with decaffeinated coffee, but not caffeinated coffee and decreased RA risk associated with high tea consumption (3). The Nurses' Health Study, found no association between coffee, decaffeinated coffee, tea or caffeine and RA risk (4).
 - Alcohol: Two case-control and one cohort study were identified all conducted in women. Results from, one case-control in the Netherlands showed a protective effect of alcohol on RA (highest intake compared to no alcohol); however the other two studies, both from the U.S. showed no significant association between alcohol intake and risk of developing RA.
 - Other food groups / nutrients: One cohort study found no association between calcium intake and RA; however a case-control study showed an inverse association between calcium and phosphorus intake as well as energy intake and RA risk (2). This latter study

- also reported a negative association between protein and meat intake and RA risk, but no association with other macronutrients or dairy foods (2).
- f. Biomarker studies: Three studies found lower levels of antioxidant nutrients (beta-carotene, retinol, alpha-tocopherol, and selenium) in individuals with RA compared to controls. Two studies from Finland report lower serum levels of alpha-tocopherol, beta-carotene and selenium in new cases of RA collected prior to symptom onset.

The authors of the review conclude that evidence for an effect of diet in the etiology of RA is limited, acknowledging weaknesses in the identified studies (1).

Individual Study (example)

- a. The Nurses' Health Study included 82,063 women and identified 546 cases of RA during follow-up (1980-2002) (7). Evaluation of diet (in particular, sources of protein and iron) found no association between RA and any measure of protein or iron intake, or of red meat, poultry and fish intake and RA risk. Similarly evaluation of data from the Nurses' Health Study and Nurses' Health Study II cohorts (over 180,000 women followed from 1980-2002) showed no association with vitamin D intake (8) or antioxidant intake (vitamins A, C, and E and alpha-carotene, beta-carotene, beta-cryptoxanthin, lycopene, lutein, and zeaxanthin from foods and supplements) (9) and risk of RA. The Women's Health Study of 39,144 health professionals followed from 1992-2004, randomized women to receive low-dose aspirin and vitamin E (600 IU/day) or placebo for primary prevention of cardiovascular disease and showed no difference between vitamin E or placebo group in risk of developing RA (10). There were also no significant risk reductions in either seropositive or seronegative RA cases (10).

It is recommended that you tour the PEN® site: www.pennutrition.com to see more examples of this practitioner friendly evidence-based approach. If you are not a PEN® subscriber, a temporary account can be arranged for you. Some pathways to consider as you familiarize yourself with the PEN® style include Cardiovascular Disease and Parkinson's Disease.

4.5 Comments

Include relevant information to support the KPP that does not belong in the evidence statements, Statements should be referenced and these references become part of the main reference list for the question.

Example - if the question is about chromium the comment might include sources of chromium in foods, different valances of chromium - food versus chemical and industrial; length of trials and lack of clarity on safety.

4.6 Rationale

This section allows explanation of the proposed or known mechanisms of action, reasoning behind research hypotheses and explanations for theories. It should be referenced and these references become part of the main reference list for the question.

Example:

KPP

In adults, data from observational studies suggest that low vitamin D status is associated with a greater risk of CVD; however clinical trials have not demonstrated a beneficial effect of vitamin D supplementation on clinical CVD outcomes. Additional research is required to examine whether a protective effect on CVD exists for vitamin D with consideration given to the dosage of vitamin D supplement used and the population studied (e.g. individuals with vitamin D insufficiency or individuals at increased risk of CVD).

Rationale

Several mechanisms have been suggested whereby vitamin D may affect risk for cardiovascular outcomes: vitamin D "regulates the renin-angiotensin system, suppresses proliferation of vascular cell smooth muscle, improves insulin resistance and endothelial cell-dependent vasodilation, inhibits

anticoagulant activity and myocardial cell hypertrophy, and may modulate macrophage activity and cytokine generation" (2).

4.7 Glossary

Provide definitions of key terminology used in the pathway that a dietitian may be unfamiliar with. Include the reference used for the definition. Definitions should be paraphrased, not put in quotations since references don't show through on the public side of the PEN® database. For more information see Appendix 14.

4.8 Background

The screenshot shows a detailed view of a knowledge pathway on the PEN website. At the top, there's a navigation bar with links for Help, Contact Us, Connect, Log Out, My Account, and My Profile. Below the navigation is a search bar with 'Search PEN...' and a 'Search' button. The main content area has a breadcrumb trail: Home » Knowledge Pathways » Health Condition/Disease » Rheumatoid Arthritis. The main title is 'Rheumatoid Arthritis: Practice Questions'. It says 'Reviewed by: CANADA UK AU NZ'. There are buttons for 'Print This Page' and 'Print Knowledge Pathway'. A green box contains the text: 'Click on "View Key Practice Points" to view the synthesis of the literature for the questions.' Below this are sections for 'Health Promotion / Prevention' (with a question about diet and risk) and 'Assessment / Surveillance' (with a note about individuals with rheumatoid arthritis). On the right, a sidebar titled 'More on this Knowledge Pathway' lists 'Practice Questions', 'Toolkit', 'Background' (highlighted with a yellow arrow), 'Evidence Summary', and 'Related Tools & Resources'.

PEN® subscribers have indicated they find background materials very valuable especially if they are new to the topic area. Templates have been developed to guide the development of backgrounders depending on whether the topic is clinical, lifecycle or other. For more info see Appendix 15 and 16.

There is a section in the Background for definitions. These should be definitions that we don't want in the Glossary e.g. if there is one definition in one disease and a slightly different one in another or if the term is commonly used in another topic we don't want a multitude of underlining in a Knowledge Pathway. Please check the Glossary before adding words to the Background as we don't want to duplicate definitions. Even if a term is in the Glossary you may have a better or different reference for the term which could be useful to add to the Glossary. Make certain to include the complete reference for the definition.

4.9 Evidence Summary

The author is not responsible for creating the evidence summary. It is created by a member of the PEN® team once the new or revised knowledge pathway is finalized.

The levels of evidence under the applicable evidence categories are organized using the following wording:

- [A] The following conclusions are supported by good evidence:
- [B] The following conclusions are supported by fair evidence:

[C] The following conclusions are supported by limited evidence or expert opinion:
[D] A conclusion is either not possible or extremely limited because evidence is unavailable and/or of poor quality and/or is contradictory.

4.10 Practice Guidance Summary or Toolkits

Practice Guidance Summary (PGS)

All PGSs for each KP will be replaced with a toolkit as the KP is updated.

Practice-based Evidence Toolkits (PEN® PETs)

Following focus testing in 2012, toolkits were designed for PEN® to provide quick, one-stop-shop, easy to follow recommendations that dietitians can use in their practice. Toolkits replace the current PEN® PGS for most KPs, noting that some KPs have two toolkits, although this is not the norm. In addition to being attached to a KP, a list of toolkits can be found here:

<http://www.pennutrition.com/Toolkits.aspx>.

They include essential information for nutrition assessment, diagnosis, intervention, and monitoring and evaluation, as described using the Nutrition Care Process (NCP) Model and Nutrition Care Process Terminology (NCPT). NCPT was formerly known as International Dietetic and Nutrition Terminology (IDNT). They also include a brief summary/overview of the key findings and recommendations in the KP in addition to providing guidance for nutrition care and documentation of nutrition care using the NCPT.

Key Features of Toolkits

Key features include:

- small “bites” of information on several different pages, instead of one very large document, to minimize scrolling
- the use of white space, anchor tags, tables and bullet points for ease of navigation around the toolkits
- organized according to the NCP model and NCPT, taking the practitioner through the steps from assessment to nutrition diagnosis and intervention, monitoring and evaluation, as described using the NCP Model and NCPT
- include a brief summary/overview of the key findings and recommendations for practice.
- access to calculators that are relevant to the toolkit topic area
- links to additional related consumer and professional information on PEN® and to other carefully chosen external resources
- customizable format to accommodate country-specific information and guidance, which can be hidden or viewed by the user as desired.

When to Develop a Toolkit:

In theory, toolkits will be developed from all KPs that have PQs.

- Toolkits can be written from the perspective of a practitioner providing nutrition care to a client, patient or consumer, or from the perspective of the practitioner herself as the client or consumer (for example, when a dietitian is seeking to improve her skills in dealing with the media).
- However, there may be some situations where developing a toolkit may not be necessary or is redundant. These situations should be assessed on an individual basis. For example: When a KP has only one PQ. In this situation, consider whether there are multiple KPPs. If so, a toolkit may be warranted. If not, and there is limited practice information generated, creating a toolkit would be redundant.
- When a KP is in an uncommon area of practice (such as choline)

Developing a toolkit may not be warranted. Consider whether there are other key practice tools/guidelines available that are not part of the question/evidence or in the background document.

- When the KP does not have PQs (it has only related practice questions) a toolkit may not be necessary because the content of the KP may be covered adequately in other toolkits.

Additional Considerations:

- In some non-clinical toolkits, the steps of the NCP may not be applicable. In toolkit sections that do not have content, they will be left blank, rendering them un-clickable under the toolkit table of contents. Practitioners would not then waste time trying to find information. All non-clinical toolkits will have a minimum of two sections with content - the *Description and Key Nutrition Issues* section and the *Key Findings and Recommendations* section. When non-clinical toolkits contain content in only a few of the TK table of content sections, this will be noted in the *Description and Key Nutrition Issues* section.
- Toolkits can include content by way of hyperlinked related PQs or hyperlinks to other toolkits in the *Key Findings and Recommendations* section. These links to other toolkits or related PQs highlight practice information relevant to the toolkit topic from other KPs.

Key Points

- The PEN® Style Guide should be followed when developing the toolkit in regards to formatting, spelling, grammar and referencing.
- Authors are encouraged to review existing toolkits in PEN®. Toolkit examples: [Metabolic Syndrome Toolkit](#), [Lactation Toolkit](#) and [Diabetes Carbohydrate Counting Toolkit](#).
- To save time, you may want to write this toolkit after you receive feedback on your PQs and/or background from the reviewers to ensure that you are working with the final approved content.
- A template has been created to assist you in developing your toolkit (see Appendix 17).

Using the NCP Model and Terminology in Toolkits

For information on the NCP model and NCPT see Nutrition Care Process and [Terminology Background](#).

How are the NCP Model and Terminology used in toolkits?

PEN® toolkits are organized according to the NCP model, with each step of the process having its own page in the toolkit. The four interrelated steps of the NCP are nutrition assessment, nutrition diagnosis, nutrition intervention and nutrition monitoring and evaluation, and each step is described using NCP terminology.

Toolkit Writing Guidelines

Description and Key Nutrition Issues *Description*

The description should be one short paragraph that provides general context and a general overview of the topic area. For clinical topics, this will be a general medical overview of the condition. In some instances, the description may be the same as the introductory paragraph in the KP Background.

Examples include: [Celiac and Type 1 Diabetes Toolkit](#); [Diabetes/Glucose Intolerance Toolkit](#); [Infant Colic Toolkit](#).

Key Nutrition Issues

The key nutrition issues should be very specific to the nutrition issues addressed in the toolkit.

Include a bulleted list of the topics covered in the Key Findings and Recommendations section of the toolkit. These topics include ones from the KP practice questions KPP as well as the additional referenced information that may also be included in the Key Findings and Recommendations section.

Nutrition Assessment

The nutrition assessment is the first step in the NCP. Nutrition assessment is defined as “a systematic method for obtaining, verifying and interpreting data needed to identify nutrition related problems, their causes, and significance” (1).

Nutrition Care Process terms that may be used to describe the nutrition assessment are included in a standard table in each toolkit; writers should customize the terms for the specific nutrition topic.

To view the full list of the nutrition assessment, monitoring and evaluation terms, log on to [eNCPT: Nutrition Terminology Reference Manual*](#) and open [Nutrition Assessment](#).

* Members of DC, DAA and DNZ - see [Nutrition Care Process and Terminology Web Links](#) for access to this manual through your association.

Professional Tools and Calculators

A list of the hyperlinked names of professional tools and calculators that are applicable to the toolkit topic is included here (some of these may also be included in the nutrition assessment table).

Nutrition Diagnosis

Developing the nutrition diagnosis/es is the second step in the NCP. A nutrition diagnosis is “a food and nutrition professional’s identification and labeling of an existing nutrition problem that the food and nutrition professional is responsible for treating independently” (1). All nutrition diagnoses fall under one of three categories or domains:

- “Intake - Too much or too little of a food or nutrient compared to actual or estimated needs
- Clinical - Nutrition problems that relate to medical or physical conditions
- Behavioural-Environmental - Knowledge, attitudes, beliefs, physical environment, access to food, or food safety” (2).

Diagnoses are documented with NCPT as PES statements (P=problem; E=etiology; S=signs and symptoms). Provide one or more PES statements for each toolkit. When you are writing PES statements, provide relevant examples that will be helpful to new graduates and students when they are using/reviewing the toolkits.

(P): The nutritional problem describes the change in the client’s nutrition status, and is described using one of the nutrition diagnostic terminologies listed in the [eNCPT: Nutrition Terminology Reference Manual*](#). While logged onto the manual, open [Nutrition Diagnosis](#).

Use exact NCP terms for the nutrition problem. When dietetic practitioners first start using the NCPT, there is a tendency to choose problems that are too broad, and that can’t be resolved through the nutrition intervention. The discipline of using only the official terminology helps identify problems that are within the dietitian’s scope.

(E): The root cause, or etiology of the problem is then identified. Often the cause of the problem is targeted by the nutrition intervention, which resolves the problem. Ten etiology categories have been identified: beliefs/attitudes, cultural, knowledge, physical function, physiologic-metabolic, psychological, social-personal, treatment and access and behaviour. The etiology can be written in free-text, or using NCPT standard terms. While logged onto the [eNCPT: Nutrition Terminology Reference Manual*](#) open [Nutrition Diagnosis Etiology Matrix](#).

(S): The signs and symptoms are specific and measurable and show that the individual has the nutrition problem. If the nutrition intervention cannot address the etiology of the

nutrition problem, it should be able to improve or resolve the signs and symptoms. Signs and symptoms can be written in free text, or using terms suggested in the eNCPT: Nutrition Terminology Reference Manual.

The three components of PES statements are linked together using the following terms: “Nutrition problem label *related to* (etiology), *as evidenced by* (signs and symptoms)” (2). Formulating PES statements helps focus the nutrition practitioner on the nutrition problem(s) that will be targeted through the nutrition intervention(s).

* Members of DC, DAA and DNZ - see [Nutrition Care Process and Terminology Web Links](#) for access to this manual through your association.

Nutrition Intervention

Nutrition intervention is the third step in the NCP and is defined as “a purposefully planned action(s) designed with the intent of changing nutrition-related behaviour, risk factors, environmental condition or aspect of health status” (3). Ideally, the nutrition intervention(s) address the etiology of the nutrition problem, and result in its resolution.

Include NCP terms that may be used to describe the nutrition intervention(s) in each toolkit, with the terms customized for the specific nutrition topic. While logged onto [eNCPT: Nutrition Terminology Reference Manual](#)* open [Nutrition Intervention](#).

Nutrition Prescription

A nutrition prescription is often developed at the beginning of the nutrition intervention step. The nutrition prescription is comprised of recommendations for the intake of nutrients or foods that are specific to the individual. The recommendations are based on reference standards (e.g. Dietary Reference Intakes, dietary guidelines, standards for specific health conditions, and the individual’s nutrition diagnosis(es)).

The nutrition prescription communicates the recommendations that the dietitian and the client develop, after completing the nutrition assessment and developing the nutrition diagnosis(es). It can also be used as a comparative standard during the nutrition care process, such as, during the assessment, and monitoring and evaluations steps.

Include one or two examples of nutrition prescription(s) in the toolkit. When writing the nutrition prescriptions, provide relevant examples that will be helpful to new graduates and students when they are using/reviewing the toolkits. Guidelines for writing nutrition prescriptions are included in the eNCPT: Nutrition Terminology Reference Manual*.

While logged onto the manual, open Nutrition Intervention tab, click on Terminology, then NP-1.1

* Members of DC, DAA and DNZ - see [Nutrition Care Process Terminology Web Links](#) for access to this manual through your association.

What is the difference between the nutrition prescription and the nutrition intervention?

The nutrition intervention (NI) is an action a nutrition professional takes that:

- remedies a nutrition diagnosis, or
- resolves a nutrition problem, or
- removes the cause of the nutrition problem (3).

There are two parts to the NI - planning and implementation. The nutrition prescription (NP) is the planning component of the intervention.

Nutrition prescription (NP)

- The NP is usually developed before the NI, as part of the planning for the NI.

- The definition of the NP is: “The patient/client’s individualized recommended dietary intake of energy and/or selected foods or nutrients based on current reference standards and dietary guidelines and the patient/client’s health condition and nutrition diagnosis” (2).
- The purpose of the NP is: “To communicate the nutrition professional’s diet/nutrition recommendation based on a nutrition assessment” (2).
- The NP is not the same as the current diet order.
- The NP is limited to recommendations for specific nutrients and foods, so it is much narrower in scope than the NI implementation.

Recommending “regular” or “modified” diets in the Nutrition Prescription

The NP is an “individualized statement of the needs of the patient at a given moment in time” (3), and it is based on the nutrition assessment, and the nutrition gaps that are identified after conducting the nutrition assessment.

The NP would recommend a “regular” diet if at the time of the nutrition assessment the individual is eating a well-balanced diet that meets their nutrition needs, relative to the condition addressed in the toolkit. A “regular” diet is a standard diet based on [national dietary guidelines](#), such as Canada’s Food Guide.

The NP would recommend a “modified” diet if, the nutrition assessment identifies gaps in nutrients or foods, relative to the condition addressed in the toolkit.

An example would be to consider the case of an individual with rheumatoid arthritis, who is not on glucocorticoid therapy. Calcium is considered an “at risk” nutrient in rheumatoid arthritis.

Case 1

- The nutrition assessment shows that the individual is consuming 500 mg/day of calcium.
- The NP would be to recommend a “modified” diet, and the recommendation would be to increase calcium intake (from foods and/or supplements).
- A ‘modified diet’ is recommended even though a “regular” diet will also provide enough calcium, because the plan is to recommend a modification of the individual’s usual intake (as ascertained during the assessment).

Case 2

- The nutrition assessment shows that the individual is getting 1000 mg/day of calcium.
- The NP would be to recommend a “regular” diet, because no modification of the habitual diet is needed, as determined by the nutrition assessment.

Case 3 (the individual with rheumatoid arthritis is receiving glucocorticoid therapy)

- The nutrition assessment shows that the individual is getting 1000 mg/day of calcium.
- The NP would be to recommend a “modified” diet, since:
 - the amount of calcium recommended for individuals receiving glucocorticoid therapy is 1200-1500 mg of calcium, which is more than the amount that will be provided by national dietary guidelines, and
 - a modification of the habitual diet is needed, as determined by the nutrition assessment.

A “modified” diet would also be recommended if the nutrition assessment identifies overconsumption of certain nutrients or foods relative to the condition addressed in the toolkit (for example, as may occur in an individual with renal disease).

Nutrition intervention (NI)

- This is the implementation phase, where the plan, or NP is implemented.
- There are 13 interventions that are “designed to reduce the gap between the client’s current and ideal intake” (1). “The purpose of the nutrition intervention ultimately is to correct the nutrition diagnosis, remove the etiology, or reduce the signs and symptoms” (3).

- These interventions are in four domains - Food and/or Nutrient Delivery (when the dietitian or the institution is actively involved in providing food and/or nutrients), Nutrition Education, Nutrition Counselling, and Coordination of Nutrition Care.
- Nutrition interventions are much broader than the NP, and can involve changes to the feeding environment, or the provision of eating assistance, nutrition education or nutrition counselling, or coordination of nutrition care. In contrast, the NP is limited to recommendations for specific nutrients and/or foods.

Goals

Goals are as per the [eNCPT: Nutrition Terminology Reference Manual](#):

“Goal setting establishes patient/client goals that are clear, measurable, achievable, and time-defined. It is most desirable to set goals jointly with the patient/client; however, this is not always possible, such as in the case of some patients/clients receiving enteral or parenteral nutrition. In goal setting, the individuals responsible for the associated actions to achieve the goals are clearly identified.

These steps are essential because it is impossible to assess the impact of the nutrition intervention without quantifying or qualifying the goals so that they can be measured. If the goals are not achievable, even the most appropriate nutrition intervention could be judged as unsuccessful. Additionally, the time for achieving the individual goals should be delineated into short-term (next visit) and long-term goals (over the course of the nutrition intervention).

Goal-setting documentation should identify the parties responsible for establishing the goals and the associated actions—such as joint development with patient/client and/or family or provider-directed (e.g., patient/client unable to participate in interaction and family/other not available.” See the Appendix 17 for standard text for Clinical/Health Promotion Topics and for Nonclinical Topics.

Goal examples should be specific to the toolkit topic. For example, for the Glycemic Index Toolkit example goals should focus on nutrition-related aspects of glycemic index and would not include general diabetes goals (these would be included in the Diabetes/Glucose Intolerance Toolkit). This would also apply to other examples in the cardiovascular and obesity related toolkits.

Example:

Goals specific to glycemic index for individuals with type 1 diabetes and for individuals with or at risk of type 2 diabetes include:

- to substitute three lower GI foods for three higher GI foods every day until the next scheduled appointment (in two weeks).
- to routinely include low glycemic foods at 90% of meals and snacks.

Key Findings and Recommendations

This section includes the key findings and recommendations that are generated from the KPPs in the PEN® practice questions. These can be included either in table format or using bulleted points. References are only needed if any new content outside of the PQs and KPPs are added.

Nutrition Counselling

If information on nutrition counselling (as this term is used in the NCPT, see [Nutrition Intervention Terminology: Nutrition Counseling](#)) is to be included in the toolkit, insert this here, using either paragraph format or bulleted points.

Nutrition Monitoring and Evaluation

Nutrition monitoring and evaluation is the fourth step in the NCP. “Nutrition monitoring and evaluation involves identifying the amount of progress made and whether goals/expected

outcomes are being met. This step identifies nutrition care outcomes relevant to the nutrition diagnosis, intervention plans and goals” (4).

Nutrition Care Process terms that may be used to describe the nutrition monitoring and evaluation are included (usually in a standard table) in most toolkits. The terms should be customized for the specific toolkit topic. While logged on to AND [eNCPT: Nutrition Terminology Reference Manual](#)* open [Monitor/Evaluation](#).

* Members of DC, DAA and DNZ - see [Nutrition Care Process Terminology Web Links](#) for access to this manual through your association.

For more information on NCPT, see [Frequently Asked Questions](#)

Nutrition Education Materials

PEN® Client Handouts

Include PEN® client handouts that are relevant to the toolkit topic.

Food Lists (Foods Recommended/To Avoid)

Include PEN® client handouts that are food lists that are relevant to the toolkit topic.

Key Additional Client Handouts

Include other organizations’ and international handouts and factsheets that are PEN® approved and relevant to the toolkit topic.

Additional Information

Clinical Practice Guidelines

Include clinical practice guidelines that are relevant to the toolkit topic.

Related Toolkits

Include toolkits that are related to the toolkit topic.

Nutrition Care Process Terminology

This section is standard - see Appendix 17

References

This section is standard - include a bulleted list of references that were used to develop the toolkit; include only additional references to the ones that were used in the knowledge pathway practice questions. Often no additional references will be needed. See Appendix 17 for the standard text included in this section.

References (for this Toolkit Writing Guideline section)

1. The Academy of Nutrition and Dietetics. eNCPT: Nutrition Terminology Reference Manual. 2014. Available from: [Nutrition Care Process Terminology Web Links](#)
2. Skipper A. Applying the nutrition care process: nutrition diagnosis and intervention. Support Line. 2007 Dec;29(6). Available from:
http://www.andeal.org/files/file/Skipper_Article%20%282%29.pdf
3. Atkins M, Basualdo-Hammond C, Hotson B. Canadian perspectives on the nutrition care process and international dietetics and nutrition terminology. Can J Diet Pract Res. 2010;71(2):106. Available from: <http://www.dietitians.ca/downloadable-content/public/ncp-and-idnt-statement-eng.aspx>

4.11 Related Tools and Resources (TR)

These can include a number of different kinds of materials (see below). Before including a TR, review it against the PEN® TR Approval Checklist ([Appendix 18](#)).

There are three different areas on PEN® where TRs can exist:

- Related TRs for professionals or clients (separate and individual resources or for multiple web links as a composite listing)
- Background -that focuses on resources for professionals under Key Resources for Professionals
- Toolkits (and PGSs) that focuses on resources for clients)

PEN® is looking to include the very best tools on a particular subject, not an exhaustive collection of every client or professional tool on a particular subject. Reviewing TRs against the PEN® TR Checklist will help to know their appropriateness for PEN®.

For each TR included in the pathway provide the following information. If there are versions of the same TR in other languages please include links to these as well:

Title: Tool name

Description: (include the publisher name in the description and if the resource is for a professional, consumer/patient or both. For example: This Health Canada fact sheet provides information for consumers on calcium requirements)

URL:

Key words: relevant keywords specific to the tool should be included. Also include the name of the language if different from English

Knowledge Pathway:

Developer/Publisher:

Author: if a book - (see below for: Guidelines for Recommending Books as PEN® Ts)

Country of Origin - note if specific to a country (e.g. Canada, United Kingdom, Australia, New Zealand) please specify or if applicable to an international population.

- **Partner TRs** - on the PEN® partner websites, on both the public side and the member-only side, can be linked in PEN®. For TRs on the member-only side a note must be included in the TR description that **membership is required to access**. If the TR is no longer available on the partner website but is evaluated to still be a relevant resource, a PDF of the TR will be made by the PEN® Resource Manager and attached to the description.
- **Consumer information sheets** - In addition to being consistent with the evidence described in the knowledge pathway, the consumer tools should not promote any specific products or include corporate logos or promotion. Ideally, the handout should be visually appealing, plain language should be used and the reading level should be between grade 5 and 9. See PEN® pathway Nutrition Education Resource Development for more details and the PEN® TR Approval Checklist.
- **Policy/Advocacy / \Discussion Papers** - This section should identify key policy documents that exist relative to the topic i.e. school food policy; national nutrition recommendations; food safety standards; public health nutrition staffing policies per population group; etc.
- **Position Papers** - provide links to relevant position papers. Consider using Selected Users' Guide worksheets ([Appendix 9](#)) to evaluate them.
- **Practice Guidelines / Protocols** - provide links to relevant clinical practice guidelines and protocols. Consider using Selected Users' Guide worksheets ([Appendix 9](#)) to evaluate them.
- **Books**
Guidelines for Recommending Books as PEN® TRs
Including books as Tools and Resources (TR) in PEN® can be challenging because of the magnitude of what is in the book and ensuring that all the information is evidenced-based. It is also difficult to

recommend websites for purchasing the book without endorsing a book company, a publisher or website. Therefore the following guidelines have been developed to assist in decision making about including a book as a TR in PEN®.

Criteria for Inclusion:

- if it is from the following associations/publishers:
 - Dietitians of Canada
 - British Dietetic Association
 - Dietetic Association of Australia
 - Dietitians of New Zealand
 - American Dietetic Association
 - National Academies Press
 - Scientific reference for nutrition, such as DRIs
 - Others as approved by the PEN Resource Managers
- if a book covers material that is evidence-based and has been reviewed by a number of nutrition experts
- if a book is recommended by PEN® authors, reviewers, the PEN® team or portals as a credible source of evidence on a nutrition-related topic and is approved by the PEN® Resource Managers

Book Description

How to document a book in PEN®:

- Follow the TR template:

Title:

Description: Include as the last line of description “Available for purchase. ISBN xxx”

- URL: See below

KP:

Key Words:

Author:

Publisher:

URL:

- if full contents available online, direct link to book contents
- link to the publisher or order form, if book is from one of the associations/publishers listed above in the “Criteria for Inclusion” section.
- If book is not from one of the associations or publishers listed, do not add a bookstore link and include the ISBN in the description.
- Evidence-based websites can be recommended and if they contain the book and the information on how to locate it is within the website

Other Considerations:

- Occasionally an entire book can be read on the internet and in the description it can be indicated who the author is by saying "this book by xxx". However in most cases the book needs to be purchased. The TR description should include this information and does not need to include the author as there are no copyright concerns if just a specific chapter of a book is recommended, this must be clearly described
- Example of the reference or on the additional resources list of Backgrounders or Practice Guidance Summaries for books without a link:
Nightly IP. Nutrition for your bladder. Prime Publishing. Ottawa. 2003. Available for purchase. ISBN: 00011124567
- **Tables, questionnaires, forms**
- **Calculators (e.g., nomograms, BMI)**
- **Food Product Sources (retail, wholesale)**
- **Community Resources (national resources are best)**

4.12 Related Knowledge Pathways

Provide a list of PEN® topics, questions or KPs that may contain additional information that is related to this issue/topic.

4.13 Other links

(websites, Partner Networks/Interest Groups, Communities of Practice, on-line courses)

Recommended websites should be credible, preferably national in scope, be directly related to the knowledge pathway and free of advertising. If there is more than one general website recommended, then a separate Related TRs called Web Links should be developed. See **Appendix 15** and **Appendix 16** - Background templates for details on creating this TR.

4.14 References

PEN references must be written in a specific format. For journal articles the easiest way to get the correct format is to copy the citation from the PubMed abstract, remove the subscript numbers beside authors name (if applicable), leave the first 6 authors names and add et al after the 6th, include the DOI number if there is one and add the abstract URL link. If possible strip all formatting using Wordpad,TextEdit or a like application. See example below.

References for journal articles (published or open-access) do not need a cited date but require a link to the URL abstract, preferably from PubMed. A cited date is only needed when the content is subject to change and does not have a published copy (e.g. websites, wikis, PEN® content, etc.) and for personal communication.

If you are using reference citation software, choose ‘National Library of Medicine’ as the citation style. You will need to add the PubMed abstract link as shown in the examples below. Free reference citation software is available from: <http://www.mendeley.com/>

Examples

Journal reference:

Lionetti E, Castellaneta S, Francavilla R, Pulvirenti A, Tonutti E, Amarri S, et al. Introduction of gluten, HLA status, and the risk of celiac disease in children. *N Engl J Med.* 2014 Oct 2;371(14):1295-303. doi: 10.1056/NEJMoa1400697. Abstract available from: <http://www.ncbi.nlm.nih.gov/pubmed/25271602>

PEN® content

Dietitians of Canada. Is flaxseed (ground flax, flaxseed oil, flax oil capsules) safe to consume during pregnancy? In: Practice-based Evidence in Nutrition® [PEN]. 2013 May 31 [cited 2014 Oct 9]. Available from: <http://www.pennutrition.com>. Access only by subscription.

4.15 Other PEN® Related Written Content

Social Media

Authors are asked to provide a short, succinct teaser about the PEN® content you have written that can be used for a tweet (Twitter) and a post on the PEN® Facebook page. Here are examples:

Twitter tweet (maximum 140 characters):

Chitosan has questionable significance in weight loss among overweight or obese adults. For more info, see:

<http://www.pennutrition.com/index.aspx?ReturnURL=%2fKnowledgePathway.aspx%3fkpid%3d153%2526pcatid%3d146%26pqid%3d18733>

Facebook post (no maximum length but want something informative but short and easy to read):

Are chitosan supplements effective for weight loss among overweight or obese adults?

Any effect of chitosan on weight loss is of questionable clinical significance. For more information,

see: <http://www.pennutrition.com/KnowledgePathway.aspx?kpid=15325&pqcatid=146&pqid=18733>

Or

Are chitosan supplements safe for weight loss among overweight or obese adults?

While chitosan supplements appear to be well tolerated in most people, the potential does exist for interference with warfarin, for shellfish allergy and, as with most ocean-derived products, for heavy metal contamination. Chitosan is often derived from shrimp, lobster and crab exoskeleton. For more information, see:

<http://www.pennutrition.com/KnowledgePathway.aspx?kpid=15325&pqcatid=146&pqid=18733>

News Making Evidence

Purpose of News-making Evidence (NME)

- To provide a critical analysis of a "hot topic" or article in the news
- To provide timely analysis of, or comment on nutrition issues or controversies
- To prepare association members, PEN® subscribers / users to provide a consistent message / practice approach to consumers, clients, other healthcare professionals and to the media about the issue
- To feature topics drawn from PEN® evidence or if not in PEN® content be incorporated into PEN® either as an evidence clip, practice question or tools/resources (TRs).
- To provide timely content for social media posts.

New-making Evidence is found on the PEN® home Page:

<http://www.pennutrition.com/NewsMakingEvidence.aspx>

There are three categories, only the first two requiring authors:

- **Article Analysis (AA)** - a one page critical appraisal of a single newsworthy article (primary research or review) with a brief commentary on how this new information fits with current knowledge and the practice implications.
- **Evidence Clip (EC)** - a short topic overview or an analysis of a topic (preferably one to two pages including the references), supported by current evidence, as well as providing practice implications and recommendations.
- **Other** - links to documents such as policy documents, guidelines, position statements, credible media stories or hot topics that have been identified as newsworthy or relevant for dietitians, but not requiring an author. However, a short introduction or lead-in is often provided to the link.

Article Analysis

The recommended outline for analyzing a research article or review paper (herein called "Article Analysis") is as follows:

Article/Topic Title

Study Overview

Evidence Analysis

The Bottom Line

See Additional Content: (Link to any related PEN® content)

Contributors (include credentials)

Suggested format: Authored by Jane MEd, RD and reviewed by Kerri, RD

References

Authors should also submit suggested key words.

If the topic of the article identified for NME is not in PEN® or it contradicts PEN® evidence, the article should be analyzed with a view to explaining the conclusions and how it might affect practice. The article may elicit a revision to PEN® content. When possible, topics should be applicable to all partner countries.

Article Analysis Process

Authors are invited to write NME articles with mentorship from a PEN® Evidence Analyst.

PEN® Resource Managers will coordinate the authoring and review of an AA.

Evidence Clips

Topic experts will be invited to write an EC. PEN® Resource Managers will oversee any authorship according to established guidelines and will coordinate reviewers.

The ECs will be available on PEN® as a related TR attached to a relevant knowledge pathway.

For Dietitians of Canada members, ECs will also be posted to the members' side of the DC website under Member; Other Resources; and Public Resources A-Z at

<http://www.dietitians.ca/Member/Resources-from-A-Z/Evidence-Clips.aspx?categoryID=60>. For partner association members, placement will be according to the partner association if they decide to use the EC on their site.

A template exists for the ECs and includes the following headings:

Topic Title

Topic Overview

Evidence Analysis

The Bottom Line

See Additional Content: (Link to any related PEN® content)

References

Contributors (include credentials)

Suggested format: Authored by Heather MSc RD and reviewed by Beth MEd RD.

5.0 Appendices

Appendix 1 PEN® Author Waiver (sample)

ASSIGNMENT OF INTELLECTUAL PROPERTY AND INTELLECTUAL PROPERTY RIGHTS AND WAIVER OF MORAL RIGHTS

TO: DIETITIANS OF CANADA

WHEREAS Dietitians of Canada ("DC") has entered into a consulting services agreement (the "Services Agreement") dated _____ with _____ (Name of "Contractor") for the provision of the Services (as defined under the Services Agreement);

AND WHEREAS _____ (Name of "Contractor") has contributed to the Works pursuant to the terms of the Services Agreement;

AND WHEREAS Contractor requires that this assignment of intellectual property and intellectual property rights and waiver of moral rights be executed as a condition for the benefit of DC in accordance with the Services Agreement;

AND WHEREAS the Assignor intends that this assignment supersede any other assignment as between the Assignor and DC in respect of the subject matter of this assignment of intellectual property and intellectual property rights and waiver of moral rights ("Assignment and Waiver");

NOW THEREFORE, for the payment of \$ _____ and good and valuable consideration, the receipt and adequacy of which is acknowledged, the Assignor agrees as follows:

The Assignor represents and warrants that, in respect of the Works, the Assignor has not infringed, violated or misappropriated the rights of any other person.

The Assignor hereby:

- irrevocably sells, assigns, transfers, sets over and conveys to and in favour of DC all of the Assignor's worldwide right, title and interest in and to the Works and Intellectual Property Rights therein; and
- irrevocably and unconditionally waives in favour of DC any author, moral or similar rights that the Assignor has or holds in the Works or in any part thereof.

This assignment and transfer shall be an irrevocable and absolute assignment to and for the sole and exclusive benefit of DC. This Assignment and Waiver is in addition to any other assignment, or similar instrument entered into, by the Assignor to and in favour of DC. If there is a conflict between this Assignment and Waiver and any other assignment or instrument between the Assignor and DC, this Assignment and Waiver shall rank in priority to any such other assignment or instrument.

This Assignment and Waiver shall enure to the benefit of DC and its successors and assigns and be binding upon DC and the Assignor and the Assignor's heirs, assigns, successors in interest, administrators and legal representatives, as applicable.

The Assignor shall execute all such further assignments and other documents, and shall do all such further acts and things as may be necessary or desirable in the opinion of DC from time to time in order to more effectively complete the assignment and transfer to DC contemplated hereunder.

This Assignment and Waiver shall be governed by and construed and enforced in accordance with the laws of the Province of Ontario and the federal laws of Canada applicable therein, without regard to any principles of conflicts of law. In the event of any litigation to enforce the terms of this Assignment and Waiver, the parties hereto irrevocably consent to the exclusive jurisdiction of the Courts of Ontario with the venue being the Courts of Ontario in the City of Toronto, Ontario, Canada.

This Assignment and Waiver may be executed either by original signature, or by facsimile signature, or by PDF signature attached to an email.

IN WITNESS WHEREOF the Assignor has executed this Assignment and Waiver as of this _____ day of
_____ 20_____.

Witness Name:

Contractor Name:

Schedule A

Definitions

"Intellectual Property Rights" means any:

intellectual property rights provided in Canada under copyright law (including moral rights), trademark law, patent law, industrial design law or any other Law applicable to the Agreement, which may provide rights in:

- any software and works (including, without limitation, any literary works) and compilations of works of any kind, word and design marks and other distinguishing features associated with wares and services, inventions, business methods, developments and industrial designs, as applicable, whether registered or unregistered, and any confidential information and trade secrets, or
- the expression or use of any of the foregoing;
- rights in and to any application, registration, licence, sub-licence, assignment, waiver, agreement or any other instrument or document that evidences any rights set out in subsection 1(a) above; and
- rights to enforce the rights and obtain remedies for any violation of any of the rights set out in subsections 1(a) and (b) above.

"Law" means any law, statute, code, ordinance, decree, rule, regulation, bylaw, statutory rule, principle of law, published policy and guideline, judicial or arbitral or administrative or ministerial or departmental or regulatory judgment, order, decision, ruling or award, including general principle of common and civil law, and terms and conditions of any grant of approval, permission, authority or licence of and any agreement with any governmental authority.

"person" means any individual, corporation, partnership, limited liability company, proprietorship, association, trust or other legal entity other than the Assignor.

"Works" means any and all materials, content and work products that have been conceived, created, written, made, produced, reduced to practice or developed by the Assignor pursuant to or in connection with the provision of the Services, including all information, software, specifications, flow charts, plans, drawings, designs, records, manuals, procedures, data and databases, reports and other documentation in all formats, whether complete or not, all of which are described below:

A WORD document of: (please specify the work to be done):

Declaration of Affiliations and Interests Form
Practice-based Evidence in Nutrition®

Name: _____

I have reviewed my current activities and those of recent years, particularly as they relate to the attached *Affiliations and Interests Checklist*. I have also considered the activities of my spouse and immediate family members in so far as they could be viewed to affect my impartiality.

I would like to bring the following to the attention of Practice-based evidence in Nutrition® [PEN]:

I hereby certify that I am not in a position of real, potential or apparent conflict of interest except as disclosed above.

If before the PEN content I am developing or reviewing has been completed there are any changes in circumstances that may place me in a position of real, potential or apparent conflict of interest I will inform PEN.

Signature: _____ Date: _____

PLEASE RETURN WAIVER TO:

PEN Canada - Beth Armour: beth.armour@dietitians.ca

PEN UK - Global PEN: Globalpen@bda.uk.com

PEN AU / NZ - Carolyn Jamieson: penadmin@daa.asn.au

Adapted from the Office of the Canadian Task Force on Preventative Health Care

Affiliations and Interests Checklist

In reviewing your activities (and those of your spouse and immediate family members) to determine whether they affect your impartiality or create a real, potential or apparent conflict of interest, among other things, consider the following:

- Investments in a business enterprise (Other than mutual funds or Registered Savings Plans)
- Retirement Savings Plans that are not self-directed);
- Participation as investigator in clinical trials of relevance to the knowledge pathway;
- Previous, present and potential Contracts, Grants and/or Contributions;
- Pending negotiations regarding potential contracts;
- Honoraria and other sources of personal income;
- Gifts and hospitality of significant value;
- Travel sponsorship;
- Promotion of a product(s) of relevance to the knowledge pathway;
- Publications;
- Public statements;
- Lobbying activities;
- Membership in special interest groups;
- Expert testimonies in court;
- Any interest or activity, which may create a reasonable apprehension of bias.

Appendix 2 PEN® Writer's Checklist

Before submitting your MS WORD document for editing please check that your document is ready. Include information on the reviewer's including their name, email address and country of origin.

For all content - new or updated:

- I read Appendix 11 of the PEN® Writers Guide on plagiarism. **Note:** modifying just a few words is an inadequate summary and appraisal.
- All of the evidence statements are reflected in the Key Practice Point (KPP). **Note:** extra information from articles may be included in the Comment section. Evidence statements are NOT to be summaries or replications of study abstracts.
- When appropriate I have included a Rationale statement for a Key Practice Point. This includes a proposed mechanism of action (e.g. biochemical interaction contributing to the effect). This is very useful to the reader.
- All of the comments from reviewers have been incorporated or addressed in my author's MS WORD working document. **Note:** authors should save the copy with the reviewer's comments, indicating that you have addressed each one with a check mark or why you didn't address them in case the reviewer asks why the comment wasn't addressed once the content is posted in PEN. The editor does not need to see the comments, but it is good to have such a document if there are questions as to why the content changed.
- I have noted in a Comment bubble any of the submitted content that requires copyright permission e.g. a table from an article.
- I have linked all journal articles in the reference section to PubMed abstracts, when available. Note: if an article is not found in PubMed, try to find a link to the abstract elsewhere.
- I have ensured that all references in the reference list match those in the written content, all are used, are in the correct order, and are formatted exactly according to the PEN Style Guide (see Appendix 20 of the PEN® Writer's Guide - section 4.6 for correct citations for different types of references).
- I have identified tools and resources and have provided the required information according to the headings in Section 4.12 Related Tools and Resources of the PEN® Writer's Guide.

For reviewing and updating an existing knowledge pathway or a question:

- I started with the clean copy of the existing PEN content that I received from a PEN team member. **Note:** if the changes are too significant to use track changes, please contact the PEN Editor for guidance on how to proceed.
- I used Track Changes when making my edits in the MS WORD document.
- I updated questions by conducting a new literature review, reviewing and updating each KPP, each article and each evidence statement. **Note:** if there are no changes for an evidence statement, it is assumed that the evidence statement has been reviewed and it is still up-to-date.
- I have indicated, using a Comment bubble, if the related questions (if included in the MS WORD document) are or are no longer consistent with the new/updated content.
- I added any new questions to the MS WORD document following the updated/reviewed existing questions. I have clearly indicated which ones are new by adding a Comment bubble. **Note:** this can be done by using comment boxes or a bolded heading at the start of the new practice question section.
- I have reviewed all tools and resources attached to the KP and clearly indicated which ones to delete and which new ones to add.

Appendix 3 Guidelines for Knowledge Pathway Reviewers

These guidelines have been included so that PEN® authors are familiar with the criteria that their peers will use to review the PEN® knowledge pathways (KPs).

PEN® (Practice-based Evidence in Nutrition) GUIDELINES FOR KNOWLEDGE PATHWAY REVIEWERS

Role of the Reviewer

1. Your primary task is to determine the acceptability of the KP content, for the total KP or for an answer to a specific practice question (PQ). You are providing feedback to the author(s) for the purpose of improving the quality of KP content and its usefulness to practitioners. Points to consider: scientific soundness, practice merit, interest, value, clarity and readability. See attached checklist.
2. The reviewer is not anonymous to the author(s). The review form contains your constructive feedback and questions directed to the author(s) and these go directly to them without editing or see **Note** below. Be as clear and concise as possible since these comments form the basis for their revision of the answer to the PQ/KP.
3. Please number the points in your Comments for Authors to facilitate checking the author's rebuttals or explanation of revisions.
4. It is particularly helpful to the PEN® Pathway Coordinator and the author if your comments differentiate clearly between:
 - a. the need for clarification or improvement of a key practice point (KPP)
 - b. required additions to a Knowledge Pathway (i.e. additional resources, web links, client education tools)
 - c. scientific criticisms, including completeness of literature review or grading of the evidence

Note: the easiest and most clear way to provide feedback to the author is to use Track Changes in the WORD document containing the PEN® content - adding your comments and suggested wording changes. If you choose this method of providing feedback then you only need to complete page 40 of this document and send it and the content document to the PEN® Pathway Coordinator. Page 40 is not sent to the author so if you have comments that you would rather the author didn't see then put them on page 40.

5. Reviewers must respect the ownership of PEN® content and author's rights by not making copies of the PEN® documentation or sharing it with others, except with the permission of the PEN® Pathway Coordinator.



The Global Resource
for Nutrition Practice

PEN® (Practice-based Evidence in Nutrition) CHECK LIST FOR REVIEWERS

Note: The principles relating to format, clarity, precision of language and logic apply to all answers to PEN® practice questions (PQs) and Knowledge Pathways (KPs).

Practice Question

Is the PQ written in a clear, concise manner? Is it suitable as a foreground practice question or should it be in Background information?

Key Practice Point

Are the Key Practice Points (KPPs) relevant to the question? Are they clearly written? Is the evidence complete and graded appropriately? Are there other practice points which should be made to answer this question? Are the practice points according to VIA?

Validity - Can you trust the information? Are the source and level of evidence stated?

Importance - Will the information make an important difference to practice? Are the outcomes ones practitioners or clients would care about?

Applicability - Can you use this information in practice settings? (consider access, practicality or cost issues etc)

Rationale and Comments

If these sections are included, are the remarks appropriate and do they add to the clarity of the knowledge pathway? If there is no rationale or are no comments provided, should there be?

Evidence

Are there key / important articles / studies which haven't been included as part of the evidence?

Are the references cited to ensure that they are current and appropriate in scope?

Are references:

- Accurate, verifiable, and peer reviewed?
- Authority - from an authoritative source - e.g. peer reviewed journal, RCT, systematic review or national guideline or policy? Where the recommendations rely on expert opinion this too must be clearly stated so that practitioners understand the strength of the evidence supporting a particular key practice point.
- Objective - science-based (evidence-based?) and evaluated according to recognized standards of evidence (peer reviewed) etc. See grading of evidence levels.
- Current - very recent (publications written in the last 2 years or websites where content is reviewed at least annually. An older item may be considered if no newer information or research exists or it sets the foundation for future research (e.g. NICE guidance, a Surgeon General's report) or stands the test of time e.g. a key document such as DRI's.

Key Words

Are suitable key words provided for each Knowledge Pathway and Practice Question? Do you disagree with any of the existing ones? Can you identify any additional ones? Have all U.K. / European spellings of the words been included?

Background

Is it complete, accurate? Is there other content that should be included in the Background document, including other links to background information?

Evidence Summary

Is the summary brief, does it provide an overview / roll-up of the KPPs in each of the four levels of evidence?

Practice Guidance Summary or Toolkits

Is the summary brief, does it provide an overview / roll-up of the KPPs and relevant background material, written as educational guidelines for the practitioner to use with clients / consumers.

Are tools for consumers listed? PEN® is looking to include the very best client tools on a particular subject, not an exhaustive collection of every client tool on a particular subject. Reviewing client tools and resources against the PEN® Tool and Resource Checklist will help to know their appropriateness for PEN®.

Resources / Tools

The goal of PEN® is to survey the landscape on a particular topic and provide a selection of the very best tools available that are consistent with the evidence. And where appropriate uses UK quality accredited items e.g. Information Standard, NHS evidence.

Has the author included the best tools to support this knowledge pathway? Are there any missing? Are there any that should be eliminated? Of those that are recommended for inclusion, are they:

- Accurate, verifiable, and peer reviewed?
- Authority - from an authoritative source? Where recommendations rely on expert opinion this too must be clearly stated so that practitioners understand the strength of the evidence supporting a particular key practice point.
- Does the information already exist on PEN®, either as the same resource or very similar for another source? If so, is it warranted to add?
- Objective - science-based and evaluated according to recognized standards of evidence.
- Current - very recent (publications written in the last 2 years or Web sites where content is reviewed at least annually. An older item may be considered if no newer information or research exists or it sets the foundation for future research (e.g. NICE guidance, a Surgeon General's report) or stands the test of time e.g. a key document such as DRI's.
- Scope - they must address the KP topic and, where appropriate, should encompass the continuum of health promotion/protection; disease prevention; diagnosis, treatment/intervention; rehabilitation and support. Resources that describe and/or evaluate programs and/or discuss "lessons learned" are particularly helpful to the professional community of practice and should be included in each knowledge path.
- Access - are websites and other electronic resource selections easily accessible (i.e. no charge) and navigable. If electronic access is not provided, does the information provided allow the user to easily locate the tool? Is the content directly related to the KP?
- PEN® content is free from commercial bias and all linked tools and resources should be as well. If there is a particular commercial tool which you think is critical to have in the KP please discuss it with your PEN® team contact
- Are suitable key words provided for each tool?
- If reviewing a specific consumer resource complete the [PEN® Guidelines for Third Party Tool / Resources Approval \(Appendix 16\)](#).

DC PEN: Practice-based Evidence in Nutrition®
REVIEWER'S REPORT TO COORDINATOR OF THE PEN® REVIEW

Title of Knowledge Object: _____

Knowledge Object:

Knowledge Pathway _____ Practice Question _____ Background _____ Toolkit _____
Tool or Resource _____ Evidence Clip _____ Article Analysis _____ Other _____

Practice Question (if applicable): _____

Reviewer's Name: _____ **Due Date:** _____

Email: _____ **Dietetic Association:** _____

Recommendations for this Knowledge Object:

- Accept as is
- Accept with minor revision (Unless notified otherwise by you, we will **not** circulate minor revisions for further review.)
- Accept with major revision (e.g. a major re-approach to analysis or new data incorporated)
- Reject

Confidential Comments to the Coordinator of the PEN® Review: (Please support your recommendations and indicate which comments you made to the author are critical, requiring corrections to make the practice answer or Knowledge Pathway acceptable.)

If major revisions are recommended, would you be willing to review the revised practice answer / Knowledge Pathway?

Yes _____ No _____

Do you agree to being listed as a reviewer in PEN®? Yes _____ No _____

If yes, please include your professional credentials as you would like them reflected as a reviewer of PEN® content:

If you agree to be listed as a reviewer, do you agree to have your email address posted so PEN® subscribers might contact you if they want to discuss the content of the pathway?

Yes _____ No _____

If yes, the same email address as above? Yes _____ OR

Preferred email: _____

According to the Affiliations and Interest Checklist:

I hereby certify that I am not in a position of real, potential or apparent conflict of interest.

I have included the completed the Declarations of Affiliations and Interests form.

Signature: _____

Date: _____

**Declaration of Affiliations and Interests Form
PEN: Practice-based Evidence in Nutrition®**

Name: _____

I have reviewed my current activities and those of recent years, particularly as they relate to the attached *Affiliations and Interests Checklist*. I have also considered the activities of my spouse and immediate family members in so far as they could be viewed to affect my impartiality.

I would like to bring the following to the attention of PEN: Practice-based Evidence in Nutrition®:

Add text here:

I hereby certify that I am not in a position of real, potential or apparent conflict of interest except as disclosed above.

If before the PEN® content I am developing or reviewing has been completed there are any changes in circumstances that may place me in a position of real, potential or apparent conflict of interest I will inform PEN®.

Signature _____ Date _____

Note: adapted from the Office of the Canadian Task Force on Preventative Health Care

If applicable, please return this completed form to:

PEN® Canada - Beth Armour: beth.armour@dietitians.ca

PEN UK – Ingrid Darnley: Globalpen@bda.uk.com

PEN AU / NZ - Carolyn Jamieson: penadmin@daa.asn.au

PEN® (Practice-based Evidence in Nutrition)

COMMENTS FOR AUTHORS

(only complete if Track Changes was not used in the PEN® content document)

Title of Knowledge Pathway under review:

Practice Category:

Practice Sub-Category:

Key Practice Question (if applicable):

General Comments:

Specific Comments: (please number your comments, and identify the page, category, sub-category, practice question, key practice point, evidence, resource /tool etc. Alternatively, you may wish to make them in the WORD document using Track Changes.

Missing Key Practice Questions:

Missing Background Information:

Missing Resources / Tools:

Policy/Advocacy/Discussion Papers

Position Papers

Practice Guidelines / Protocols

Tables, questionnaires, forms

Calculators (e.g. nomograms; BMI)

Food Product Sources (retail, wholesale)

Community Resources

Other links (websites; partner networks/interest or practice groups and on-line courses)

Glossary

Do you have any suggestions for additional key words?

**PLEASE RETURN REVIEW TO:
Will vary with the professional association affiliation**

Appendix 4a Practice Categories and Knowledge Pathway Template
(Practice Categories and Sub-Categories)

Population Health/ Lifecycle	Health Condition/ Disease	Food / Nutrients	Professional Practice
Health Promotion / Prevention - key practice points	Health promotion/ Prevention - key practice points	Health promotion / Prevention - key practice points	Not applicable
Assessment / Surveillance - key practice points	Assessment / Surveillance - key practice points	Assessment / Surveillance - key practice points	Not applicable
Intervention within different settings (workplace; community; school, etc) - key practice points	Intervention (Nutrition care plan - assessment and implementation) - key practice points	Intervention (Legislative and other frameworks - key practice points	Not applicable
Evaluation / Outcome Indicators - key practice points	Evaluation / Outcome Indicators - key practice points	Evaluation / Outcome Indicators - key practice points	Evaluation / Outcome Indicators - key practice points
Education - goals - key practice points - client education tools - health intermediary tools	Education - goals - key practice points - client education tools (links to handouts; food lists; recipes) - other resources i.e., counseling / education techniques or strategies	Education - goals - key practice points - client education tools(links to handouts; food lists; recipes) other resources i.e., counseling / education techniques or strategies	Education - goals - key practice points - client education tools(links to handouts; food lists; recipes) - other resources i.e., counseling / education techniques or strategies

RESOURCE LINKS

Summary of Evidence	Summary of Evidence	May not be applicable	May not be applicable
Practice Guidance Summary	Practice Guidance Summary	Practice Guidance Summary	Practice Guidance Summary
Background	Background	Background	Background / Relevance to Practice
Policy/Advocacy/Discussion Papers	Policy/Advocacy/ Discussion Papers	Policy/Advocacy/Discussion Papers	Policy/Advocacy/Discussion Papers
Position Papers	Position Papers	Position Papers	Position Papers
Practice Guidelines / Protocols	Practice Guidelines / Protocols	Practice Guidelines / Protocols	
Tables, questionnaires, forms	Tables, questionnaires, forms	Tables, questionnaires, forms	Tables, questionnaires, forms
Calculators (e.g. nomograms; BMI)	Calculators (e.g. nomograms; BMI algorithms; PDA resources)	Calculators (e.g. nomograms; BMI algorithms; PDA resources)	
Food Product Sources (retail, wholesale)	Food Product Sources (retail, wholesale)	Food Product Sources (retail / wholesale)	
Community Resources	Community Resources	Community Resources	
Related Knowledge Pathways	Related Knowledge Pathways	Related Knowledge Pathways	Related Knowledge Pathways

Appendix 4b Knowledge Pathway Template

Category:

Sub-Category:

KP Topic:

Question (repeat format for each question)

1. Key Practice Point (repeat format for each practice point)

Evidence Synthesis

Grade of Evidence ([A], [B], [C] or [D])

Practice Guidance

Evidence

a.

b.....

Comments

Rationale

References

1.

2.....

2. Key Practice Point (repeat format for each practice point)

Evidence Synthesis

Grade of Evidence ([A], [B], [C] or [D])

Practice Guidance

Evidence

a.

b.....

Comments

Rationale

References

1.

2.....

Question Key Words

Evidence Summary

[A] The following conclusions are supported by good evidence:

[B] The following conclusions are supported by fair evidence:

[C] The following conclusions are supported by limited evidence or expert opinion:

[D] A conclusion is either not possible or extremely limited because evidence is unavailable and/or of poor quality and/or is contradictory.

Practice Guidance Summary or Toolkit

Background

Related tools and resources

Tool name

Description

URL

Keywords

Target Country

Developer/Publisher

Author

Glossary

Pathway Key Words (if you are doing a complete Knowledge Pathway)

Appendix 5 Evidence Grading Checklist

The conclusion is supported by GOOD evidence. (A)

1. Evidence	<input checked="" type="checkbox"/>
<p>The results are from studies of strong research design for answering the practice question, clear methodology and sufficient sample size. Supporting studies might consist of:</p> <p><u>Treatment / Intervention Studies</u></p> <ul style="list-style-type: none"> • good quality systematic review (SR) of randomized controlled trials (RCTs) with consistent findingsⁱ and a low risk of biasⁱⁱ • SR including several trials combined in a single well-done meta-analysis with consistent findingsⁱ • two or more high quality randomized, controlled trials with a low risk of biasⁱⁱ. <p><u>Etiology / Prognosis Studies</u></p> <ul style="list-style-type: none"> • SR of cohort studies (with homogeneity) or two or more independent well-done prospective cohort studies with consistent results in the absence of evidence to the contrary, where treatment/exposure effects are sufficiently large and consistent <p>Note: Evidence might also be in a position statement or practice guideline from a national body or organization reporting results of research studies based on the aforementioned types of research</p>	
2. Consistency ⁱⁱⁱ - results are consistent with minor exceptions at most	
3. Clinical impact ^{iv} - results are clinically important	
4. Generalizability ^v - results are free of any sufficient doubts about generalizability	
5. Applicability ^{vi} - results are directly applicable to practice setting	

The conclusion is supported by FAIR evidence. (B)

1. Evidence:	<input checked="" type="checkbox"/>
<p>The results are from studies of strong design with minor methodological concerns or from studies with weaker designs for answering the practice question, but results have been confirmed in separate studies and are generally consistent. Supporting studies might consist of:</p> <p><u>Treatment / Intervention Studies</u></p> <ul style="list-style-type: none"> • systematic review (SR) of RCTs with heterogeneity although overall the results support the conclusion • a single RCT with low risk of biasⁱⁱ • two or more RCTs with a clinically significant conclusion and unclear risk of biasⁱⁱ <p><u>Etiology / Prognosis Studies</u></p> <ul style="list-style-type: none"> • SR of cohort studies (with homogeneity) or two or more well-done prospective cohort studies with consistent findingsⁱ. • SR of case-control studies (with homogeneity) or several independent case-control studies with similar conclusions <p>Note: Evidence might also be in a position statement or practice guideline from a national body or organization reporting results of research studies based on the aforementioned types of research</p>	
2. Consistency ⁱⁱⁱ - there is some uncertainty attached to the conclusion because of minor inconsistencies among the results from the studies but inconsistencies can be explained	
3. Clinical impact ^{iv} - minor doubt about clinical significance of benefits or harms	
4. Generalizability ^v - there is minor doubt about generalizability	
5. Applicability ^{vi} - generally applicable to practice setting with few exceptions	

The conclusion is supported by LIMITED evidence or expert opinion. (C)

<p>1. Evidence</p> <p>The results are from studies of weak design for answering the practice question or there is substantial uncertainty attached to the conclusion because of inconsistencies among the results from different studies. Supporting studies might consist of:</p> <p><u>Treatment / Intervention Studies</u></p> <ul style="list-style-type: none"> • two or more RCTs with inconsistent results or high risk of biasⁱⁱ • non-randomized trial or trial that used historical controls • systematic review (SR) of cohort or case-control studies (with homogeneity) or two or more well-done prospective cohort studies with consistent findingsⁱ <p><u>Etiology / Prognosis Studies</u></p> <ul style="list-style-type: none"> • SR of cohort and case-control studies (with heterogeneity) or two or more studies with some inconsistent results • results from a single cohort study or two or more case-control studies, unconfirmed by other studies • results from a number of high quality cross-sectional studies, well described case reports or case series <p>Note: Evidence might also be in a consensus report, a position statement or practice guideline from a national body or organization reporting results of research studies based on the aforementioned types of research.</p>	✓
2. Consistency ⁱⁱⁱ - inconsistencies among the results from different studies leads to substantial uncertainty about conclusions	
3. Clinical impact ^{iv} - uncertain or moderate	
4. Generalizability ^v - there is substantial uncertainty about the generalizability	
5. Applicability ^{vi} - likely applicable to practice setting with some exceptions	

A conclusion is either not possible or extremely limited because evidence is unavailable and/or of poor quality and/or is contradictory. (D)

<p>1. Evidence:</p> <p>The results are from a single study with major design flaws or from studies with such contradictory results that conclusions can't be drawn. Alternatively, evidence is lacking from either authoritative sources or research involving humans. Supporting studies might consist of:</p> <ul style="list-style-type: none"> • a very poorly designed and executed trial or intervention • evidence from a single case report, case series, case-control study or ecological study unconfirmed by other studies • anecdotal reports • evidence from a small number of similar quality studies that report contradictory results (e.g. two cohort studies that report opposite associations) • research in the <i>in vitro</i>, <i>ex vivo</i> or animal model 	✓
2. Consistency ⁱⁱⁱ - usually highly inconsistent	
3. Clinical impact ^{iv} - difficult to assess or minimal	
4. Generalizability ^v - not generalizable or very limited generalizability	
5. Applicability ^{vi} - not applicable or very limited applicability to the practice setting	

ⁱ A meta-analysis of RCTs should undergo a statistical analysis of heterogeneity that shows consistency (or homogeneity) between studies.

ⁱⁱ Risk of bias is an assessment of the validity of studies included in a review (i.e. the risk that they over- or underestimate the true effect of the intervention). Low risk of bias includes studies that demonstrate adequate sequence generation, allocation concealment, blinding, completeness of outcome data and no other sources of bias. For additional information refer to PEN® Writer's Training Module – Appraising the Literature (<http://www.pennutrition.com/WriterGuide.aspx>) and Higgins et al., 2011

ⁱⁱⁱ Consistency considers whether findings are consistent across studies, considering the range of study populations and study designs, including the direction and size of the effect or degree of association, and the statistical significance.

^{iv} Clinical impact considers the potential benefit of applying the recommendation to a population, including: the relevance of the outcomes to the clinical question, the magnitude of the effect, the length of time to achieve the effect, and the risks versus the benefits.

^v Generalizability considers how well the population, the intervention and the outcomes in the evidence match the population in the practice question being asked. It considers factors such as gender, age, ethnicity, health status, and how the treatment is delivered.

^{vi} Applicability considers whether the evidence is relevant to the practice / health care setting. It considers such factors as access, cost issues etc.

Note: The quality of the evidence is a major factor determining the grade; however consideration is given to factors that influence findings, including: consistency, impact, generalizability and applicability. In some cases these factors can supersede the evidence base.

Description of Study Designs

Review Articles

A systematic review is “a critical assessment of existing evidence that addresses a focused clinical question, includes a comprehensive literature search, appraises the quality of studies, and reports results in a systematic manner. If the studies report comparable quantitative data and have a low degree of variation in their findings, a meta-analysis can be performed to derive a summary estimate of effect.” (Ebell et al, 2004).

The evidence cited in the systematic review is what should govern the assignment of the grade. The conclusions generated from a systematic review are only as strong as the research studies included in the review. However, a good quality systematic review should also be well designed and executed. It should describe or include the following:

- search strategy used to locate relevant studies
- study inclusion / exclusion criteria
- an appraisal of the quality and validity of the studies included
- process for data abstraction, synthesis and analysis
- any bias, funding sources or author conflict of interest (authors of the included studies and the systematic review).

A narrative review is a nonsystematic overview of a topic. It generally is not an exhaustive or structured review of the literature, it is more susceptible to bias and does not systematically evaluate the quality of included studies according to any pre-determined criteria. It can be used to identify original studies that can be evaluated and reported as evidence. Generally conclusions from narrative reviews are not reported in the evidence; however in some situations (for example, no recent studies are identified or the compiled studies consist of C- or D-Level evidence), the narrative review can be described in the evidence. In this case, the studies cited should be described and used to assign the evidence grade.

Randomized Controlled Trials

They usually demonstrate whether therapeutic agents are beneficial but can also, less frequently, demonstrate harm. The exposed and unexposed groups should be similar in all respects other than intervention and this balance should be maintained throughout. A high quality randomized controlled trial exhibits the following characteristics: allocation concealed, blinding if possible, intention-to-treat analysis, adequate statistical power, adequate follow-up (>80%).

Observational studies

Observational studies are studies in which investigators do not intervene, but observe the course of events and record changes or differences in one characteristic (e.g. whether they received the exposure of interest such as

smoking, exercise or vegetable intake) in relation to changes or differences in other characteristics (e.g. disease development, progression or death).

Observational studies include: cohort studies (prospective or retrospective), case-control studies, cross-sectional studies, case reports and case series.

A cohort study follows a defined group of people (the cohort) over time. Outcomes observed in subsets of the cohort who were exposed to a particular factor are compared to outcomes in those not exposed to a particular factor. A prospective cohort study follows participants into the future; a retrospective cohort study identifies subjects from past records and follows them from the time of those records to a certain point in time. A high quality cohort design exhibits the following characteristics: prospective design, adequate size, adequate spectrum of patients, blinding, a consistent well-defined reference standard, good follow-up, and appropriate adjustment for confounders.

A case-control study compares people with a specific disease or outcome of interest (cases) to people without the disease or outcome (controls) to find associations between the outcome and prior exposure to particular risk factors.

A cross-sectional study measures the distribution of a characteristic in a population or sample at a certain point in time (for example: a survey).

A case report or case study describes observations among a single individual.

A case series study describes observations among a series of individuals usually all subject to the same intervention or exposure, though there is no control group.

Expert Opinion

If there is no critical appraisal or supporting evidence to support statements and conclusions it should not be used as evidence unless it is the only reference you have. In such cases it should be disclosed that the statement is based on unsubstantiated expert opinion.

Consensus Reports, Position Statements, Practice Guidelines

If research studies are cited in a consensus report, position statement or practice guideline from a national or international body or organization, the research studies should govern the grade assignment.

References

Ebell MH, Siwek J, Weiss BD, Woolf SH, Susman J, Ewigman B et al. Strength of recommendation taxonomy (SORT): a patient-centered approach to grading evidence in the medical literature. *J Am Board Fam Pract.* 2004 Jan-Feb [cited 2009 Aug 4];17(1):59-67. Abstract available from:
<http://www.ncbi.nlm.nih.gov/pubmed/15014055>

Glossary of Cochrane Collaboration and research terms: <http://www.cochrane.org/glossary>

Greer N, Mosser G, Logan G, Halaas GW. A practical approach to evidence grading. *Jt Comm J Qual Improv.* 2000 Dec [cited 2010 Oct 25];26(12):700-12. Abstract available from:
<http://www.ncbi.nlm.nih.gov/pubmed/11143209>

Higgins JP, Atlman DG, Gøtzsche PC, Jüni P, Moher D, Oxman AD et al.; Cochrane Bias Methods Group; Cochrane Statistical Methods Group The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *BMJ.* 2011 Oct 18 [cited 2014 Jul 4];343:d5928. Available from:
<http://www.bmjjournals.org/content/343/bmj.d5928.long>

NHMRC: NHMRC levels of evidence and grades for recommendations for developers of guidelines. Canberra, ACT: National Health and Medical Research Council, Commonwealth of Australia; December, 2009 [cited 2013 Oct 16]. Available from:
http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/developers/nhmrc_levels_grades_evidence_120423.pdf

Appendix 6 Sources of Answers

Examples of Sources of Answers to Background Questions

Merck Manual <http://www.merck.com/pubs/>

DRI reports which are online at the National Academies Press (NAP). <http://www.nap.edu/>

Health Canada Office of Nutrition Policy and Promotion <http://www.hc-sc.gc.ca/fn-an/index-eng.php>

Health Canada, Natural Health Products Directorate http://www.hc-sc.gc.ca/dhp-mps/prodnatur/index_e.html

Public Health Agency of Canada <http://www.phac-aspc.gc.ca/>

Canadian Food Inspection Agency: <http://www.inspection.gc.ca>

Statistics Canada <http://www.statcan.gc.ca>

Dial-A-Dietitian Nutrition Information Society <http://www.dialadietitian.org/>

Eat Right Ontario <http://www.eatrightontario.ca/Doorway.aspx>

EMedicine from Medscape <http://emedicine.medscape.com/>

National Library of Medicine (contains Medline, Pubmed and more): <http://www.nlm.nih.gov/>

WebMD <http://www.webmd.com/>

Department of Nutrition. Harvard School of Public Health <http://www.hsph.harvard.edu/nutritionsource/>

The Stanford Health Library. Health Conditions <http://healthlibrary.stanford.edu/resources/bodysystems>

Mayo Clinic - <http://www.mayoclinic.com/>

Medline Plus <http://www.nlm.nih.gov/medlineplus/healthtopics.html>

National Center for Complementary and Alternative Medicine <http://nccam.nih.gov/>

USDA nutrient database <http://ndb.nal.usda.gov/>

Be sure to check disease-related association websites as they often publish or provide links to important guidelines or reports. See Appendix 13 - PEN® Partner Country Differences but some examples include:

Canadian Diabetes Association <http://www.diabetes.ca/>

Diabetes New Zealand <http://www.diabetes.org.nz/>

National Kidney Foundation <http://www.kidney.org>

The Cardiac Society of Australia and New Zealand <http://www.csanz.edu.au/>

The Renal Association (UK) <http://www.renal.org/home.aspx>

Examples of Sources of Answers to Foreground Questions

Agency for Healthcare Research and Quality <http://www.ahrq.gov/>

Bandolier, Evidence-based thinking about health care <http://www.medicine.ox.ac.uk/bandolier/>

BestBETs, Manchester Royal Infirmary <http://www.bestbets.org/>

Canadian Best Practice Portal for Health Promotion and Chronic Disease Prevention <http://cbpp-pcpe.phac-aspc.gc.ca/>

Canadian Cancer Review - Cancer Guidelines Resource Center <http://www.cancerguidelines.ca/>

CMA infobase - Clinical Practice Guidelines: <http://www.cma.ca/infobase>

Centre for Evidence-based Medicine: <http://www.cebm.net/index.asp>

Clinical Evidence: <http://www.clinicalevidence.com/ceweb/conditions/index.jsp>

Clinical Knowledge Summaries (CKS) services: <http://cks.nhs.uk/home>

Cochrane Collaboration <http://www.cochrane.org/index.htm>

eLENA <http://www.who.int/elenia/about/en/>

EvidenceUpdates <http://plus.mcmaster.ca/EvidenceUpdates/Default.aspx>

Health Evidence, Canada <http://health-evidence.ca/>

Medline (besides PUBMED) <http://gateway.nlm.nih.gov/gw/Cmd>

National Guideline Clearinghouse, US Agency for Healthcare Research and Quality <http://www.guidelines.gov/>

National Health and Medical Research Council: <https://www.nhmrc.gov.au/>

National Institute for Health and Clinical Evidence <http://www.nice.org.uk/>

National Library of Medicine (contains Medline, Pubmed and more) <http://www.nlm.nih.gov/>

PubMed (access to MEDLINE) <http://www.ncbi.nlm.nih.gov/sites/entrez> Note: for ‘clinical queries’, click on “Clinical Queries” in the sidebar under PubMed Services. Then enter the search words in the box under “Find Systematic Reviews”

TRIP Database, (Taking Research into Practice) <http://www.tripdatabase.com/index.html>

UpToDate® <http://www.uptodate.com/index.asp>

Appendix 7 When Less is More

Grandage K, Slawason D, Shaughnessy A, When less is more: a practical approach to searching for the evidence-based answers. J Med Libr Assoc. 2002;90(3):298-304. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC116402/>

Appendix 8 Search Strategy Worksheet

- a. Define your topic (1 or 2 sentences in your own words, if possible, in the form of a well-built question - remember PICO)
 - b. Identify main concepts (come up with 2 to 4 keywords that define your topic, the keywords should all be separate terms that represent your main ideas)
 - c. Come up with as many synonyms for each main concept (first come up with the words you can think of, then use something like the MeSH dictionary to add to the list)
 - d. Combine your terms using AND and OR
 - e. Identify any inclusion/exclusion criteria or limits (language, human vs animal, time period, types of study, etc...)
 - f. Select databases that you want to search
 - g. Record search strategies for each database and approximate number of results

Database	# of articles
PubMed	12345
Google Scholar	23456
Scopus	34567
Web of Science	45678
 - h. List other methods used to find information and record strategies used (reviewing references lists from key articles, searching the web for grey literature, other sources)

Here are some examples of this kind of worksheet:

<http://www.library.mun.ca/qeii/instruction/exercises/worksheet.php>

<http://library.humboldt.edu/infoservices/sstrawrksht.htm>

Creating a Search Strategy

STEP 1: IDENTIFY THE TOPIC / ISSUE

STEP 2: KP CATEGORY

- Population Health
- Health Condition / Disease

- Food / Nutrient
- Professional Practice

STEP 3: DEFINE THE QUESTION

Population -

Intervention -

Comparison -

Outcome -

STEP 4: IDENTIFY THE SUB-CATEGORY

- Health Promotion / Prevention
- Surveillance / Screening
- Planning
- Evaluation / Outcome
- Education

STEP 5: IDENTIFY MAIN CONCEPTS

CONCEPT A

CONCEPT B

CONCEPT C

CONCEPT D

CONCEPT E

STEP 6: DEVELOP A LIST OF SEARCH TERMS

(PubMed Clinical Queries and MeSH Dictionary help to add to concepts)

CONCEPT A

CONCEPT B

CONCEPT C

CONCEPT D

CONCEPT E

STEP 7: CONNECT WORDS AND CONCEPTS

STEP 8: IDENTIFY INCLUSION/ EXCLUSION CRITERIA

Examples: timelines, languages, age, human vs. animal, types of studies or interventions etc

Limit:

STEP 9: SELECT DATABASES TO SEARCH

Question Type:

- Diagnosis, Harm and Prognosis: Best Evidence, UpToDate, MEDLINE
- Treatment: Cochrane Library, Best Evidence, UpToDate, MEDLINE

Pre-Filtered Information

- Best Evidence (ACP Journal Club (<http://annals.org/journalclub>), Evidence-based Medicine)
- Cochrane Library (<http://www.cochrane.org/>)
- UpToDate (www.uptodate.com/home)
- Clinical Evidence (www.clinicalevidence.com)

Unfiltered Information

- MEDLINE
- Internet

STEP 10: RESULTS FROM DATABASE SEARCH

Database 1:

Results:

Database 2:

Results:

Database 3:

Results:

Systematic Reviews:

Practice Guidelines:

Case-Control Study:

Review Articles:

STEP 11: OTHER METHODS USED TO FIND INFORMATION

Appendix 9 Selected User Guides to the Medical Literature

Based on the “Users’ Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice”, this worksheet can serve as an aid to the critical appraisal of systematic reviews and summaries of evidence and Position Papers.

Appraiser: _____

Date: _____

Citation: _____

Study Question: _____

Are the results valid?

✓ ✗ ? Did the review explicitly address a sensible clinical question?

✓ ✗ ? Was the search for relevant studies detailed and exhaustive?

✓ ✗ ? Were the primary studies of high methodologic quality?

✓ ✗ ? Were assessments of studies reproducible?

What are the results?

✓ ✗ ? Were the results similar from study to study?

✓ ✗ ? What are the overall results of the review?

What are the results?

✓ ✗ ? How precise were the results?

How can I apply the results to patient care?

✓ ✗ ? How can I best interpret the results to apply them to the care of patients in my practice?

✓ ✗ ? Were all clinically important outcomes considered?

✓ ✗ ? Are the benefits worth the costs and potential risks?

Additional Comments:

Reproduced with permission of the Center for Health Evidence

Based on the “Users’ Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice”, this worksheet can serve as an aid to the critical appraisal of an article about **therapeutic interventions**.

Appraiser: _____

Date: _____

Citation: _____

Study Question: _____

Are the results valid?

✓ ✗ ? Did experimental and control groups begin the study with a similar prognosis?

Were patients randomized?

Was randomization concealed?

Were patients analyzed in the groups to which they were randomized?

Were patients in the treatment and control groups similar with respect to known prognostic variables?

✓ ✗ ? Did experimental and control groups retain a similar prognosis after the study started?

Were patients aware of group allocation?

Were clinicians aware of group allocation?

Are the results valid?

Were outcome assessors aware of group allocation?

Was follow-up complete?

What are the results?

✓ ✗ ? How large was the treatment effect?

What is the relative risk reduction?

What is the absolute risk reduction?

✓ ✗ ? How precise was the estimate of the treatment effect?

What were the confidence intervals or p-values?

How can I apply the results to patient care?

✓ ✗ ? Were the study patients similar to the patient in my practice?

Does your patient match the study inclusion criteria?

If not, are there compelling reasons why the results should not apply to your patient?

✓ ✗ ? Were all clinically important outcomes considered?

How can I apply the results to patient care?

What were the primary and secondary endpoints of the study?

Were surrogate endpoints used?

✓ ✗ ? Are the likely treatment benefits worth the potential harm and costs?

What is the number needed to treat (NNT) to prevent one adverse outcome or produce one positive outcome?

Is the reduction of clinical endpoint worth the increase of cost and risk of harm?

Additional Comments:

Based on the “Users’ Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice”, this worksheet can serve as an aid to the critical appraisal of an article about **qualitative research**.

Appraiser: _____

Date: _____

Citation: _____

Study Question: _____

Are the results valid?

✓ ✗ ? Was the choice of participants explicit and comprehensive?

✓ ✗ ? Was data collection sufficiently comprehensive and detailed?

✓ ✗ ? Were the data analyzed appropriately and the findings corroborated adequately?

What are the results?

How can I apply the results to patient care?

✓ ✗ ? Does the study offer helpful theoretical conclusions?

✓ ✗ ? Does the study help me understand the context of my practice?

✓ ✗ ? Does the study help me understand my relationships with patients and their families?

Additional Comments:

Based on the “Users’ Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice”, this worksheet can serve as an aid to the critical appraisal of an article about harm.

Appraiser: _____

Date: _____

Citation: _____

Study Question: _____

Are the results valid?

✓ ✗ ? Did the investigators demonstrate similarity in all known determinants of outcome; did they adjust for differences in the analysis?

Sub question 1? _____

Sub question 2? _____

✓ ✗ ? Were exposed patients equally likely to be identified in the two groups?

Sub question 1? _____

Sub question 2? _____

✓ ✗ ? Were the outcomes measured in the same way in the groups being compared?

Sub question 1? _____

Sub question 2? _____

✓ ✗ ? Was follow-up sufficiently complete?

Sub question 1? _____

Sub question 2? _____

What are the results?

✓ ✗ ? How strong is the association between exposure and outcome?

What are the results?

Sub question 1?

Sub question 2?

✓ ✗ ? How precise is the estimate of the risk?

Sub question 1?

Sub question 2?

How can I apply the results to patient care?

✓ ✗ ? Were the study patients similar to the patient in my practice?

Sub question 1?

Sub question 2?

✓ ✗ ? Was the duration of follow-up adequate?

Sub question 1?

Sub question 2?

✓ ✗ ? What was the magnitude of the risk?

Sub question 1?

Sub question 2?

✓ ✗ ? Should I attempt to stop the exposure?

Sub question 1?

Sub question 2?

Additional Comments:

Based on the “Users’ Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice”, this worksheet can serve as an aid to the **critical assessment of recommendations**.

Appraiser: []

Date: []

Citation: []

Study Question: []

Are the recommendations valid?

✓ ✗ ? Did the recommendations consider all relevant patient groups, management options, and possible outcomes?

[]

✓ ✗ ? Is there a systematic review of evidence linking options to outcomes for each relevant question?

[]

✓ ✗ ? Is there an appropriate specification of values or preferences associated with outcomes?

[]

✓ ✗ ? Do the authors indicate the strength of their recommendations?

[]

Are the recommendations valid?

Additional Comments:

Appendix 10 Plagiarism Guidelines

Writing content for PEN® means following guidelines for professional ethics and integrity. One of the many aspects of professional integrity is acknowledging the work of others that one uses in their own written work. Lack of proper acknowledgement is plagiarism which is considered a serious misconduct both in the academic and scientific worlds. If you are not certain if something you have written could be considered as plagiarism, please discuss it with a member of the PEN® team. Both plagiarism and self plagiarism are considered unacceptable in relation to PEN® content.

There are many definitions of plagiarism, one is:

"taking over the ideas, methods, or written words of another, without acknowledgment and with the intention that they be taken as the work of the deceiver" (1)

If you are taking content word-for-word from someone else's work then quotation marks around the content with the appropriate reference is the most common way to acknowledge the work of others.

Copying text from another source and paraphrasing it or changing or adding a few words here or there or replacing words with synonyms does not constitute creation of original work. If you use part of an article or an abstract word-for-word you would need to put that content in quotation marks and reference it. This can become an issue when summarizing a study and the study results for the PEN® evidence statements. When summarizing, one must also make certain that the exact meaning of the author's words has been reflected in your summary. In order to do this one needs to have a good understanding of the information presented, including the terms used in the original content.

A definition of self plagiarism in writing is:

"self-plagiarism occurs when authors reuse their own previously written work or data in a 'new' written product without letting the reader know that this material has appeared elsewhere." (2)

Self plagiarism is relevant to PEN® if one were to publish essentially the same content you have written for PEN® in more than place, without any indication that the content has been published in PEN®.

For more information on this topic, including examples, you are encouraged to read the following document:

Roig M. Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing. Office of Research Integrity, US Department of Health and Human Services. Available from: <http://ori.dhhs.gov/education/products/plagiarism/>

1. American Association of University Professors. "Statement on Plagiarism." *Academe*. September/October 1989 [cited 2014 Oct 30];75(5):47-48. Not available on-line.
2. Roig M. Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing. Office of Research Integrity, U.S. Department of Health and Human Services. 2011; pg 16. Available from: <http://ori.dhhs.gov/education/products/plagiarism/>

Appendix 11 Abbreviations

Abbreviations are encouraged and allowed in the PEN® database. The abbreviation should be written out in full the first time it is used in a knowledge pathway (KP), a practice question (PQ), a key practice point (KPP), an evidence statement or a Background document. In the case of the abbreviation being used in a PQ and then in a KPP it should also be written out in full the first time it is used in a KPP. The KPP's are put into the Evidence Summary (ES) without the

The PEN® Style Guide (**Appendix 20**) outlines the rules for abbreviations in references and the use if i.e. and other key abbreviations.

Appendix 12 Metric System Equivalents for Units of Measure

When developing consumer nutrition education resources, use the following table of household and metric measures adapted from :

1. Health Canada: The Canadian Nutrient File (2007 Edition). Available at:
http://205.193.93.51/cnfonline/newSearch.do?applanguage=en_CA
2. Health Canada: Health Protection Branch. Nutrient Value of Some Common Foods. Ottawa: Canadian Government Publishing, 2008.
3. Dietitians of Canada (2001). Cook Great Food. Toronto: Robert Rose Inc., 2001.

Approximate Metric Equivalents to Canadian Household Measures and Abbreviations

Length

Inches (in) <i>Imperial</i>	Millimetre (mm) Centimetre (cm) <i>Metric</i>
1/8 in	3 mm
1/4 in	6 mm
1/2 in	1 cm
1 in	2.5 cm
2 in	5 cm

Mass

Ounces (oz) <i>Imperial</i>	Grams (g) <i>Metric</i>	Pound (lb) <i>Imperial</i>
1 oz	30 g	
16 oz	454 g	1 lb

Volume

Liquid measures

Cups	Millilitres (mL) <i>Metric</i>	Ounces (oz) <i>Imperial</i>	Grams (g) <i>Metric</i>
1 cup	250 mL	8 oz	250 g
3/4 cup	175 mL*	6 oz	175 g
2/3 cup	150 mL	5 oz	150 g
1/2 cup	125 mL	4 oz	125 g
1/3 cup	75 mL	2.5 oz	75 g
1/4 cup	60 mL	2 oz	60 g

Small liquid measures

Tablespoons (Tbsp) Teaspoons (tsp)	Millilitres (mL) <i>Metric</i>	Ounces (oz) <i>Imperial</i>	Grams (g) <i>Metric</i>
2 Tbsp	30 mL	1 oz	30 g
1 Tbsp	15 mL	½ oz	15 g
1 tsp	5 mL		5 g
½ tsp	2 mL		2 g
¼ tsp	1 mL		1 g

Dry measures

Cups	Millilitres (mL) <i>Metric</i>	Ounces (oz) <i>Imperial</i>	Grams (g) <i>Metric</i>
1 cup	250 mL	8 oz	Varies
¾ cup	175 mL*	6 oz	
⅔ cup	150 mL	5 oz	
½ cup	125 mL	4 oz	
⅓ cup	75 mL	2.5 oz	
¼ cup	60 mL	2 oz	

Small dry measures

Tablespoons (Tbsp) Teaspoons (tsp)	Millilitres (mL) <i>Metric</i>	Ounces (oz) <i>Imperial</i>	Grams (g) <i>Metric</i>
2 Tbsp	30 mL	1 oz	Varies
1 Tbsp	15 mL	½ oz	
1 tsp	5 mL		
½ tsp	2 mL		
¼ tsp	1 mL		

Alcohol Equivalent Measures²:

Definitions of a Canadian standard drink

These Guidelines for "standard drinks" of beer, wine and spirits are based upon sizes that contain 17.05 ml or 13.45 g of pure alcohol. The following are estimated to equal one standard drink:

- 341 mL (12 oz.) bottle of 5% beer, cider or cooler
- 142 mL (5 oz.) glass of 12% wine
- 43 mL (1.5 oz.) shot of 40% spirits

* Note: Nutrient Value of Some Common Foods uses 200 mL. Cook Great Food and other cookbooks (i.e. Anne Lindsay) use 175 ml for ¾ cup.

² Low-Risk Drinking Guidelines: <http://www.lrdg.net/guidelines.html>

Appendix 13 PEN Partner Country Differences

The following are examples of terminology and links for use in PEN® when recommendations of a general nature are being made and we want to highlight PEN® partner country differences.

Standard descriptive text in the KPP should be linked - this would allow for:

- Ensuring standardization of text for our evidence analysts / writers
- When needed, updating one document versus each document this text would be linked to
- Easy addition of other partner countries in the future

We are hoping to have some kind of country visual at some point, as in the example of the Healthy Eating Guidelines, we aren't there yet at this level of flag system but may soon be.

Government Guidelines

Healthy Eating Guidelines

Individuals should strive to meet their nutritional needs by following their national government's dietary recommendations / guidelines: [Healthy Eating Guidelines](#)

Dietary Reference Values

Food guidelines vary in different countries and are usually based on a country's adopted reference intakes for healthy individuals. These reference intakes are specified on the basis of age, gender and lifecycle stage and cover energy and a varying number of nutrient substances. They are used in the planning and assessing of nutritionally adequate diets for healthy individuals. [Dietary Reference Values](#)

Dietary Guidelines

Dietary guidelines and culturally-relevant food and dietary patterns that will help the individual be well nourished and will reduce the risk of chronic disease: [Dietary Guidelines](#)

Physical Fitness Guidelines

In addition to nutrition guidelines, individuals should strive to meet a healthy lifestyle by following their national government's physical activity guidelines: [Physical Fitness Guidelines](#)

Association Guidelines

Guidelines for Prevention and Treatment of Specific Diseases (name the disease)

Depending on the country, recommendations for disease prevention and treatment can be from government-developed guidelines or guidelines from disease-specific associations:

e.g. - [Prevention and Treatment of Cardiovascular Disease](#)

Partner Country Collections Available
http://www.pennutrition.com/international_guidelines_collection.aspx

Alcohol Guidelines

[International Alcohol Guideline Collection](#)

Allergy Guidelines

[International Food Allergen Regulation and Guideline Collection](#)

Diabetes Mellitus Guidelines

[International Diabetes Mellitus Guideline Collection](#)

Dietary Reference Values

[International Dietary Reference Values Collection](#)

Dietary Guidelines

[International Dietary Guidelines Collection](#)

Guidelines for Prevention and Treatment of Cardiovascular Disease

[International Guideline Collection for the Prevention and Treatment of Cardiovascular Disease](#)

Healthy Eating Guidelines

[International Healthy Eating Guideline Collection](#)

Healthy Weights/Obesity Guidelines

[International Healthy Weights/Obesity Collection](#)

Infants and Children Guidelines

[International Infant and Child Guidelines Collection](#)

Physical Activity Guidelines

[International Physical Activity Guideline Collection](#)

Education

[International Dietetic Competency Collection](#)

Food and Nutrition Labelling Guidelines

[International Food and Nutrition Labelling Guideline Collection](#)

Food Safety Guidelines

[International Food Safety Collection](#)

Food Product Alerts and Recalls

Advisories / Alerts

Australia: <http://www.tga.gov.au/safety/alerts.htm>

Canada

Canadian Food Inspection Agency (CFIA) Alerts

For a list of all of the most recent CFIA food recalls and allergy alerts [click here](#).

l'Agence canadienne d'inspection des aliments (ACIA) - Alertes

Pour la liste le plus récente des rappels d'aliments et alertes l'allergie par l'ACIA [cliquez ici](#).

New Zealand: <http://www.medsafe.govt.nz/hot/alerts.asp>

United Kingdom: <http://www.food.gov.uk/enforcement/alerts/>

United States: <http://www.foodsafety.gov/>

Recalls

Australia: <http://www.tga.gov.au/safety/recalls.htm>

Canada:

Health Canada Advisories, Warnings and Recalls

[View the past health-related advisories and warnings](#)

Avis, mises en garde et retraits de Santé Canada

[Voir les archives d'avis et de mises en garde concernant la santé](#)

New Zealand: <http://www.medsafe.govt.nz/hot/recalls.asp>

United Kingdom: <http://www.food.gov.uk/enforcement/alerts/>

United States: <http://www.foodsafety.gov/>

Appendix 14 Glossary

See relevant research-related glossary items in the Research Terms resource in the Research Methods KP at:

<http://www.pennutrition.com/KnowledgePathway.aspx?kpid=14732&trcatid=ALL&trid=18322>

Please check the PEN® Glossary (<http://www.pennutrition.com/GlossaryList.aspx>) before suggesting words to add or adding definitions to Background document as we don't want to duplicate definitions.

However, even if a term is in the Glossary you may have a better or different reference for the term which could be useful to add to the Glossary. Make certain to include the complete reference for the definition. The references used do not show through on the public side but are added to the admin notes in case there is a question about the definition.

While most of the definitions in the Glossary are Professional definitions we do have both Professional and Consumer definitions for some terms. So you may submit both types. The definition is a maximum of 3000 characters for both Professionals and Consumers.

Appendix 15 Background Template - Disease-Related Topic

Disease Background Overview

Disease Etiology

Screening/Diagnosis

Prevalence

Symptoms

Co-Morbidities/Associated Diseases

Basics should be provided. A link to a website or an article can be included if appropriate.

Medical Treatment

This section includes medications, other health care professionals involved, etc. Basics should be provided. A link to a website or an article can be included if appropriate.

Nutrition Diagnosis

This section is not applicable if a toolkit is available.

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). An 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.

Nutrition Care

This section includes nutrition care and associated goals. Nutrition goals do not need to be included if the KP has a toolkit. Nutrition care may also be covered in its entirety in the toolkit as well. However, there are some cases where additional nutrition care information in the background is necessary. See example: [Diabetes/Glucose Intolerance Background](#).

A link to the corresponding toolkit (or PGS) should be included in this section. Example: See Additional Content: [Diabetes/Glucose Intolerance Toolkit](#).

Food Service Implications

This section is N/A if there is a toolkit available. The section in the toolkit titled 'Food and/or Nutrient Delivery Example' includes food service information. Depending on the topic, this section of the background may not be needed.

Definitions

The PEN+ glossary should be checked prior to creating definitions or glossary terms to ensure that the term is not already defined. Glossary items are typically applicable to more than one KP. Background definitions are more specific to the individual KP. References are needed for all definitions and glossary terms. Background definitions can be cited directly from the reference, using quotation marks. Glossary items must be paraphrased as the reference is not shown.

Key Resources for Professionals

This section includes links, books, partner networks/interest groups, communities of practice, websites, etc.

Divide by country and list each TR alphabetically as follows:

Title: (First letter of each word should be capitalized)

Description: (Include the publisher name in the description)

URL(s): (provide links to all languages available and either hyperlink the title if it is only available in English or hyperlink each language that is available)

TRs that are international or applicable to all countries should be listed first, followed by country-specific TRs. See example: [Diabetes/Glucose Intolerance Background](#).

Web Links

Web links is a TR that contains recommended websites on a specific topic. If a Web Link TR exists for the topic, then it is listed first in the Key Resources for Professionals or Additional Resources for Professionals section

Example:

Key Resources for Professionals

Title: [Cancer Web Links](#)

Description: A collection of websites related to cancer.

Canada

Title: [The Role of the Registered Dietitian in Dysphagia Assessment and Treatment: A Discussion Paper](#)

Description: A discussion paper from Dietitians of Canada on the role of the registered dietitian in dysphagia assessment and treatment, including knowledge and skills needed for conducting swallowing assessments.

Title: Functional Foods and Natural Health Products - Canadian Industry

Description: Information from Agriculture and Agri-Food Canada on functional foods and natural health products, their regulation and link to a searchable database of suppliers.

[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 (BDA) and Parkinson's U.K. 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.

Additional Resources/Readings for the Professional

This section includes TRs that are informative, but are not critical.

Other

This section includes controversies, up-and-coming topics, economic considerations, etc.

References

The standard PEN® reference format should be followed.

Disease (specify) Background Template

Disease Etiology

Screening/Diagnosis

Prevalence

Symptoms

Co-Morbidities/Associated Diseases

Medical Treatment

Nutrition Care

Food Service Implications

Definitions

Key Resources for Professionals

Additional Resources/Readings for the Professional

Other References

Appendix 16 Background Template - Non Disease-Related Topic

Importance of Topic to Practice

Topic Overview (who, what, where, why and how of the topic)

Relevant basic information / background questions on the topic to support the PEN question content

Regulatory Issues (quality / safety monitoring, labeling, etc)

Definitions (check the PEN glossary prior to creating additional definitions or 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.)

Divide by country of origin and list each TR alphabetically as follows:

Title: (all capitals)

Description: (Include the publisher name in the description)

URL - (provide links to all languages available and either hyperlink the title if it is only available in English or hyperlink each language that is available)

TRs that are international or applicable to all countries should be listed first, followed by country-specific TRs. See example: [Diabetes/Glucose Intolerance Background](#)

Web Links

Web Links is a TR that contains recommended websites on a specific topic. If a Web Link TR exists for the topic, then it is listed first in the Key Resources for Professionals or Additional Resources / Readings for Professionals section

Example: Key Resources for Professionals

Title: [Social Media in Plain English](#)

Description: A short video from Commoncraft explaining the concept of social media through a story about ice cream production.

Canada

Title: Current Issues - Social Media 101: Part 1

Description: This PEN Current Issues article is the first of a two-part series for dietitians and describes what social media is, what it can do, why people are using it, who is using it and why it matters to dietitians.

[English](#) [French](#)

Title: Current Issues - Social Media: Part 2

Description: This PEN Current Issues article is the second of a two-part series for dietitians and describes the different forms of social media, its potential uses and potential issues and cautions for dietitians to be aware of.

[English](#) [French](#)

Title: Dietitians of Canada - Media Relations

Description: A variety of tools and resources on media relations produced under the Media and the Message Project, sponsored by Dietitians of Canada through financial support from the Canadian Diabetes Strategy – Prevention and Promotion Contribution Program, Health Canada.

Title: [Social Media Overview](#)

Description: From the Ontario Health Promotion E-Bulletin, a overview of social media for use by health care professionals.

Additional Resources / Readings for the Professional

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

References

Appendix 17 Toolkit Template

Toolkit Template

Note - if there is no content to add within a section of a toolkit, then it is left blank and will be 'unclickable' so the user will not waste time clicking trying to find information.

Key:

- Turquoise colour: TOC main headings - built into the cute editor template
- Green colour: TOC sub headings - these are hidden under main titles until "+" is clicked on - these subtitles are already in the cute editor template
- Red/burgundy colour: This is standard text that appears in all toolkits and is 'not modifiable'. As authors, use this template and just add content after the burgundy colour.

Description and Key Nutrition Issues

Description

See Additional Content: _____ Background (hyperlink to Background document).

Key Nutrition Issues

This toolkit discusses the following key nutrition issues:

(Include a bulleted list of the topics covered in the Key Findings and Recommendations section of the toolkit. See the Toolkit Writing Guidelines in the PEN® Writer's Guide for more information)

Nutrition Assessment

The nutrition assessment of (insert appropriate description i.e. an individual who needs xx) may include the following parameters using NCP terminology. (Fill in each section, using NCP terminology - see Toolkit Writing Guidelines in the PEN® Writer's Guide for assistance. If a section is not applicable, write NIL)

Anthropometric Measurements	
• Height	
• Weight	
• Weight Change	
• BMI	
• Body Compartment Estimates (waist circumference)	
Anthropometric Comparative Standards	
Measure	NCP Terminology
Adult BMI	<ul style="list-style-type: none">• Weight and Growth Recommendation<ul style="list-style-type: none">○ Recommended body weight/BMI<ul style="list-style-type: none">▪ Ideal/reference body weight (IBW)▪ Recommended BMI
Waist Circumference	As above
Food/Nutrition-related History	
<ul style="list-style-type: none">• Bullet level 1<ul style="list-style-type: none">○ Bullet level 2<ul style="list-style-type: none">▪ Bullet level 3<ul style="list-style-type: none">▪ Bullet level 4	
Food/Nutrition-related Comparative Standards	
<ul style="list-style-type: none">• Bullet level 1<ul style="list-style-type: none">○ Bullet level 2<ul style="list-style-type: none">▪ Bullet level 3<ul style="list-style-type: none">▪ Bullet level 4	
Nutrition-focused Physical Findings	

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Biochemical Data, Medical Tests and Procedures

- Bullet level 1
 - Bullet level 2
 - Bullet level 3

Client History

- Bullet level 1
 - Bullet level 2
 - Bullet level 3

(For children use:)

Anthropometric Measurements

- Height/length
- Weight
- Weight Change
- BMI
- Growth pattern indices/percentile ranks

Anthropometric Comparative Standards

Measure	Recommendation	NCP Terminology
Birth to 24 months	The WHO Child Growth Standards/Reference: For Birth to 5 years For 5 to 19 years	<ul style="list-style-type: none"> • Weight and Growth Recommendation <ul style="list-style-type: none"> ◦ Recommended body weight/BMI/growth <ul style="list-style-type: none"> ▪ Desired growth pattern
Length-for-age	(PEN QA - insert Australian flag) Growth Charts (WHO and CDC)	
Weight-for-age	(PEN QA - insert Canadian flag) WHO Growth Charts Adapted for Canada	
Weight-for-length		
Head Circumference		
2 to 19 years of age		
Height-for-age		
Weight-for-age		
BMI-for-age		
Child BMI		
	(PEN QA - insert U.K. flag) UK-WHO 0-4 years UK Growth 2-18 years	

Food/Nutrition-related History

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Food/Nutrition-related Comparative Standards

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Nutrition-focused Physical Findings

- Bullet level 1

- Bullet level 2
 - Bullet level 3
 - Bullet level 4

Biochemical Data, Medical Tests and Procedures

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Client History

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

(When the Toolkit applies to both adults and children use:)

Anthropometric Measurements

- Height/length
- Weight
- Weight Change
- BMI
- Body Compartment Estimates (waist circumference)
- Growth pattern indices/percentile ranks

Anthropometric Comparative Standards – Adult

Measure	NCP Terminology
Adult BMI	<ul style="list-style-type: none"> • Weight and Growth Recommendation <ul style="list-style-type: none"> ○ Recommended body weight/BMI <ul style="list-style-type: none"> ▪ Ideal/reference body weight (IBW) ▪ Recommended BMI
Waist Circumference	As above

Anthropometric Comparative Standards – Children

Measure	Recommendation	NCP Terminology
Birth to 24 months Length-for-age Weight-for-age Weight-for-length Head Circumference	The WHO Child Growth Standards/Reference: For Birth to 5 years For 5 to 19 years (insert Australian flag) Growth Charts (WHO and CDC)	<ul style="list-style-type: none"> • Weight and Growth Recommendation <ul style="list-style-type: none"> ○ Recommended body weight/BMI/growth <ul style="list-style-type: none"> ▪ Desired growth pattern
2 to 19 years of age Height-for-age Weight-for-age BMI-for-age	 (insert Canada flag) WHO Growth Charts Adapted for Canada (Insert UK flag) UK-WHO 0-4 years UK Growth 2-18 years	
Child BMI		

Food/Nutrition-related History

- Bullet level 1

- Bullet level 2
 - Bullet level 3
 - Bullet level 4

Food/Nutrition-related Comparative Standards

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Nutrition-focused Physical Findings

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Biochemical Data, Medical Tests and Procedures

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Client History

- Bullet level 1
 - Bullet level 2
 - Bullet level 3
 - Bullet level 4

Professional Tools and Calculators

(Insert hyperlinked list of professional tools and calculators that are relevant to the toolkit topic. Group by country if relevant. Commonly used ones are listed below.)

[Adult BMI Calculator](#)

[Child BMI Calculator](#)

[International Dietary Reference Values Collection](#)

[International Dietary Guidelines Collection](#)

[The WHO Child Growth Standards for Birth to 5 years](#)

[The WHO Growth Reference for 5 to 19 years](#)

[Waist Circumference Measurement](#)

(insert Australian flag)

[Growth Charts \(WHO and CDC\)](#)

(insert Canada flag)

[WHO Growth Charts Adapted for Canada](#)

(Insert UK flag)

[UK-WHO 0-4 years](#)

[UK Growth 2-18 years](#)

Nutrition Diagnosis

Sample PES Statements (problem, etiology, signs and symptoms using some NCP terminology)

This/ese statement(s) is/are provided as examples only, and will not apply to all individuals:

- (Insert bulleted list of nutrition diagnoses – see PEN® Writer's Guide for assistance in developing PES Statements)

Nutrition Intervention

Nutrition Prescription

A nutrition prescription is often developed at the beginning of the nutrition intervention step. The nutrition prescription is comprised of recommendations for the intake of nutrients or foods that are specific to the individual. The recommendations are based on reference standards (e.g. Dietary Reference Intakes, dietary guidelines, standards for specific health conditions, and the individual's nutrition diagnosis(es)).

The nutrition prescription communicates the recommendations that the dietitian and the client develop, after completing the nutrition assessment and developing the nutrition diagnosis(es). It can also be used as a comparative standard during the nutrition care process, such as, during the assessment, and monitoring and evaluations steps.

Nutrition Prescription Examples

Recommend: (insert bulleted list of recommendations – see PEN® Writer's Guide for assistance in developing examples)

- Bullet level 1
 - Bullet level 2
 - Bullet level 3*

(If applicable) * Note: The evidence is limited and/or conflicting for the above finding/recommendation and this should be conveyed to the infant's caregivers.

NCP Terminology for Nutrition Intervention

Nutrition interventions may be in the area of (insert appropriate phrase, for example: 'food and/or nutrient delivery if the individual is an inpatient in a facility, or in the area of nutrition education and nutrition counselling if the individual is seen in an outpatient setting, or before discharge from an inpatient setting'. Coordination of nutrition care is another possible nutrition intervention.)

Food and/or Nutrient Delivery Example(s)

- Bullet level 1
 - Bullet level 2
 - Bullet level 3

Nutrition Education Example(s)

- Bullet level 1
 - Bullet level 2
 - Bullet level 3

Nutrition Counselling Example(s)

- Bullet level 1
 - Bullet level 2
 - Bullet level 3

Coordination of Nutrition Care Example(s)

- Bullet level 1
 - Bullet level 2
 - Bullet level 3

Goals

Goals are as per the eNCPT: Nutrition Terminology Reference Manual. For more information see the Toolkit Writing Guidelines in the PEN® Writer's Guide for more information.

Standard Text for Clinical/health Promotion Topics

Goals for an individual with (name the condition/health promotion area) should be determined in conjunction with the client, and should be specific to the individual. Goals that are set should be time-sensitive, easily measured, and achievable by the nutrition intervention. Both short-term and long-term goals may be set. Examples of short- and long-term goals include:

- To reduce the intake of sweetened beverages from eight to four per week by the next scheduled appointment (in 1 month).
- To achieve and maintain recommended blood glucose levels through diet and lifestyle modifications, in conjunction with medical therapy for diabetes.

Standard Text for Nonclinical Topics

Goals in this area are usually specific to the practitioner/dietitian's practice and may apply to individuals or populations. Examples of goals that may be appropriate for the practitioner/dietitian are as follows:

- to promote media literacy awareness and skills, both in consumers and other health professionals.
- to become familiar with information about the use and safety of sweeteners so that clients can make informed decisions about their use.

Key Findings and Recommendations

Key findings and recommendations include... (Insert short summary in a paragraph format or using bulleted points)

(Include key findings and recommendations in table format or using bulleted points)

Nutrition Counselling

(If information on nutrition counselling (as this term is used in the NCPT is included, insert this here, using either paragraph format or bulleted points)

Nutrition Monitoring and Evaluation

(Insert this sentence if monitoring and evaluation is not routinely performed for the toolkit topic)
If needed, indicators that were measured in the nutrition assessment can be repeated.

(Insert this sentence and table if monitoring and evaluation are routinely performed for the toolkit topic)

Indicators that may be monitored during the nutrition monitoring and evaluation step include: (fill in each section, using NCP terminology; if not applicable, delete row. See Toolkit Writing Guidelines in the PEN® Writer's Guide for assistance)

Possible Indicators to Monitor	NCP Terminology
Changes in Body Weight	<p>Anthropometric Measurements – Adult</p> <ul style="list-style-type: none">• Height• Body Weight• Weight Change (% weight change over one month, three months, six months)• Adult BMI• Compartment Estimates (waist circumference)• Comparative Standards<ul style="list-style-type: none">◦ Ideal/reference body weight◦ Recommended BMI <p>Anthropometric Measurements – Child</p> <ul style="list-style-type: none">• Height/Length• Body Weight• Comparative Standards<ul style="list-style-type: none">◦ Child BMI◦ Desired growth pattern<ul style="list-style-type: none">▪ WHO Child Growth Standards

	<ul style="list-style-type: none"> ▪ WHO Growth Reference 5-19 years ▪ Australian Growth Charts (WHO & CDC) ▪ WHO Growth Charts Adapted for Canada ▪ UK-WHO 0-4 years ▪ UK Growth 2-18 years
Changes in Dietary Intake	<p>Food/Nutrition-Related History</p> <ul style="list-style-type: none"> • Bullet level 1 <ul style="list-style-type: none"> ◦ Bullet level 2 <ul style="list-style-type: none"> ▪ Bullet level 3
Changes in Nutrition Knowledge, Goals and Lifestyle Changes	<p>Food/Nutrition-Related History</p> <ul style="list-style-type: none"> • Bullet level 1 <ul style="list-style-type: none"> ◦ Bullet level 2 <ul style="list-style-type: none"> ▪ Bullet level 3
Changes in Physical Findings	<p>Nutrition-focused Physical Findings</p> <ul style="list-style-type: none"> • Bullet level 1 <ul style="list-style-type: none"> ◦ Bullet level 2 <ul style="list-style-type: none"> ▪ Bullet level 3
Changes in Laboratory Values and Tests	<p>Biochemical Data, Medical Tests and Procedures</p> <ul style="list-style-type: none"> • Bullet level 1 <ul style="list-style-type: none"> ◦ Bullet level 2 <ul style="list-style-type: none"> ▪ Bullet level 3
Recent Changes in Client History	<p>Client History</p> <ul style="list-style-type: none"> • Bullet level 1 <ul style="list-style-type: none"> ◦ Bullet level 2 <ul style="list-style-type: none"> ▪ Bullet level 3

Nutrition Education Materials

PEN® Client Handouts

The following list contains handouts for clients created by the PEN® team or its partner associations. Other tools and resources for professionals and clients can be found under the Related Tools & Resources (hyperlink to the topic knowledge pathway related tools and resources tab) tab. (Group by country if applicable)

Title: Handout Name (hyperlink)

Title: Handout Name

English French (each language is hyperlinked)

Title: Handout Name

English French Chinese Punjabi Spanish Vietnamese (each language is hyperlinked)

Food Lists (Foods Recommended/To Avoid)

The following are handouts for clients developed by PEN® or its partner organizations. Other tools and resources for professionals and clients can be found under the Related Tools & Resources (hyperlink) tab. (Group by country if applicable)

Title: Handout Name (hyperlink)

Title: Handout Name

English French (each language is hyperlinked)

Title: Handout Name

English French Chinese Punjabi Spanish Vietnamese (each language is hyperlinked)

Key Additional Client Handouts

The following key client handouts were developed by third-parties external to PEN® and its partner organizations. Other tools and resources for professionals and clients can be found under the Related Tools & Resources ([hyperlink](#)) tab.

Title: Handout Name ([hyperlink](#))

Additional Information

Clinical Practice Guidelines

Title: Clinical Practice Guideline name ([hyperlink](#))

Related Toolkits

Toolkit name ([hyperlink](#))

Nutrition care Process Terminology

See country-specific information on NCPT in [Nutrition Care Process and Terminology Web Links](#):

See Additional Content: [Nutrition Care Process and Terminology Background](#).

References

1. (Insert bulleted list of references, if applicable, as per PEN® Style Guide)

This toolkit provides an overview of practice recommendations that have been summarized from relevant key practice points contained in PEN® knowledge pathways. To view the key practice points (including the associated references) see the Knowledge Pathway name ([hyperlink](#)).

(OR use the format below if the toolkit includes content from related practice questions)

This toolkit provides an overview of practice recommendations that have been summarized from relevant key practice points contained in PEN knowledge pathways. To view the key practice points (including the associated references) see the Knowledge pathway name ([hyperlink](#)) and the following related practice questions:

Q: PEN® practice question? View Key Practice Points ([hyperlink](#))

In addition, the source of the NCPT used in this toolkit is: The Academy of Nutrition and Dietetics. eNCPT: Nutrition Terminology Reference Manual. 2014. Available from: [Nutrition Care Process and Terminology Web Links](#).

Appendix 18 PEN® Guidelines for Third Party Tool/Resource (TR) Approval

Purpose: To ensure that third party TRs are valuable additions to PEN®, by considering the following criteria for new and current TRs.

Guidelines

PEN® client handouts are the preferred resources, but when these are not available PEN® administrators need to use clinical judgment when reviewing external resources.

Generally, the more global or widely applicable a resource is, the better, however country or even region specific resources can be added to PEN®.

Critical criteria are the key points that need to be met and that make or break including a resource on PEN®. Critical criteria are bolded in the table below and include:

- consistency with PEN® evidence (see PEN® Supporting evidence)
- does not contain sponsorship or links to sponsored information (see Sponsorship)

The additional (not critical) criteria can be used:

- when making a decision on the usability (and readability) of the T/R for users
- in the TR description
- in classifying the TR within PEN®.

It is not expected that the TR will meet all of the additional criteria.

Exceptions are sometimes made, particularly if no other TR exists on the topic. If in doubt, check with the PEN® Resource Managers.

Topic Area	Criteria
Existing T/Rs	Does the T/R currently exist in PEN®? <ul style="list-style-type: none">• Search on the administrative side so that each portal's TRs can be viewed.• Ensure that the TR is not part of an existing collection.• If the TR is in PEN®, is the new T/R an updated version? (If it is, then the existing TR would be updated.)• If it does not exist in PEN®, is the new information better than what already exists? Should it replace a resource in PEN® or be added as an additional Related Tool and Resource? An example would be a resource with similar content, but from another country of origin.
PEN® supporting evidence	Is the information in the TR current and congruent with the evidence in PEN®? Is there evidence missing in PEN® related to the content of this tool i.e. is there a practice question or key practice point PEN® needs to answer? Has the question already been assigned? Can the TR be added before the evidence-based answer is posted? If content is not covered in PEN®, is the TR evidence-based, is the author credible?
Sponsorship	Does the TR meet the PEN® Sponsorship Policy Guidelines?
Access considerations	If the TR is housed on a website: <ul style="list-style-type: none">• Is the website appropriate (information is unbiased); credible (author's qualifications are sound and preferably peer reviewed); and directly related to KP content and is current (last 3-5 years)?<ul style="list-style-type: none">○ The website does not contain sponsorship; or advertising and other links are appropriate (as defined above)○ If the TR is a PDF, is there a URL to use instead? (URLs are easier for updating and identifying broken links.)○ If an OPEN or CPEN TR, is there any information specific to the call centres that needs to be removed? (instruction to call centre RDs, contact info)○ Is there information specific to PEN® that needs to be added?
Design	Does the TR have a date, organization logo identifying where it is from?

Topic Area	Criteria
considerations	<p>Is the TR national/global in scope? Or is the TR specific to one geographic area within a country? Is it appropriate just for Canada? Is it appropriate for Global PEN®?</p> <p>Is it clear who the intended audience is for the TR?</p> <p>Does it provide useful/relevant information for the intended audience?</p> <p>Is the layout clear, good flow of information, grammatically correct, no typos?</p> <p>Can the TR be easily loaded and printed?</p> <p>Does the user have to be registered to the site to access the tool? Is there a user fee or a subscription required? Note: it is OK to use tools that require any of these but it should be noted in the description of the tool.</p> <p>Is the TR available in other languages and/or culturally adapted?</p> <p>Does the TR have an option for the visually impaired?</p> <p>Are all the links in the TR active?</p>
Resources for Professionals	<p>For TRs for professionals:</p> <ul style="list-style-type: none"> • Is the information source referenced? • Is the TR better added under Key Resources for Professionals in the related KP Background rather than as a Related TR (e.g. a separately loaded TR)?
Resources for Clients	<p>For T/Rs for clients:</p> <ul style="list-style-type: none"> • Does the language/reading level match the audience? (Client R requiring a high level of literacy may be fine, but the literacy level needs to be noted in the description. (Aim for reading levels of about grade 5 to 9) • Is there an advisory to the effect that health information should not be taken as health advice and does not substitute consultation with a health professional?
Corporate sector developed T/Rs	<p>TRs that have been developed by the corporate sector or other organizations/agencies external to PEN® may be eligible for inclusion in PEN® if they are reviewed through an independent peer review process and deemed congruent with the evidence in PEN® when assessed by the PEN®/CC-PEN® Resource Managers and/or Knowledge Pathway author. Preference will always be given to T/Rs that have not been developed by corporate interests, should similar tools exist. If these TR contain names/logos of products or services the following considerations should be used for their assessment in PEN®:</p> <ul style="list-style-type: none"> • if the TR is a database listing of products or services, its goal should be to assist the consumer and/or health provider in making healthy food choices; • should be inclusive and as national in scope as possible, or at least be broader than one region; product or company; and • if there is no other resource that is available and there is a high user need for the information. <p>An example currently in PEN®: Diabetes Products and Medications http://www.diabetes.ca/documents/about-diabetes/CDA_ConsmrGuide.pdf</p>

Appendix 19 Link to PEN• Orientation Tutorial

The link to the PEN® Orientation Tutorial can be found on the PEN Home page - under the section: Key / Useful / Quick Links or can be accessed using this URL:
http://www.pennutrition.com/module_library.aspx

The Tutorial is composed of 5 modules:

- [Module I](#): An Introduction to the Power of PEN
 - Applying What You've Learned - Module I
[[Print](#) these instructions after viewing the video]
- [Module II](#): Searching PEN Using the Table of Contents
 - Applying What You've Learned - Module II
[[Print](#) these instructions after viewing the video]
- [Module III](#): More Search Strategies
 - Applying What You've Learned - Module III
[[Print](#) these instructions after viewing the video]
- [Module IV](#): More Great PEN Features
 - Applying What You've Learned - Module IV
[[Print](#) these instructions after viewing the video]
- [Module V](#): Practice-based Evidence Toolkits [PETs]
 - Applying What You've Learned - Module V
[[Print](#) these instructions after viewing the video]



PEN: Practice-based Evidence in Nutrition®

Style Guide

March 17, 2015

Table of Contents

1.0 Forward.....	2
2.0 Introduction	4
3.0 Writing Knowledge Pathways.....	4
4.0 Knowledge Pathway Format.....	4
4.1 Font	5
4.2 Spacing.....	5
4.3 Headings.....	6
4.4 Bullets.....	6
4.5 Key Grammar Tips.....	6
4.6 Pathway References.....	9
5.0 Appendices.....	12
Appendix I - PEN® Key Word Determination Framework	12

1.0 Forward

PEN® has a series of manuals or “How-To” Guides for new and seasoned PEN users and administrators, each designed as a comprehensive reference on a specific application. Each document provides the foundation for developing a common understanding and approach that maintains the integrity, consistency and excellent standards required for the PEN® service. This guide is one in a series of guides including:

- Content Management Guide
- Cross Portal Resource Sharing Guide
- Cute Editor Style Guide
- PEN® Portal Handouts - User Guide
- Copyright Management Guide
- Glossary Management Guide
- PEN® Corporate Identity Style Guide
- PEN® Style Guide
- PEN® Standard Entry Guide
- PEN® Toolkit Writer’s Guide
- PEN® Writer’s Guide
- Portal Consumer Resource Development Guide
- Resource Distribution Fulfillment Guide
- Search Management Guide.

What is PEN®?

Practice-based Evidence in Nutrition® [PEN] is an evidence-based decision support service developed by Dietitians of Canada (DC) and launched in the fall of 2005. Thought leaders from the dietetic profession, knowledge translation and evidence-based decision-making and technology were consulted and engaged in the conceptualization, design and implementation of PEN. Review the impressive list of contributors at <http://www.pennutrition.com/contributors.aspx>.

Designed to support busy dietitians and other health professionals to keep pace with the vast amount of food and nutrition research available, PEN® enables them to be knowledge managers through ready online access to trusted and credible practice guidance based on questions arising in everyday nutrition practice.

Recognized authorities on each topic addressed in the PEN® system, identify the relevant literature from filtered and original sources and critically appraise, grade and synthesize that literature into key practice points which answer the practice questions. Additionally, client resources and other tools that are congruent with the evidence are included in PEN® to support practice, along with backgrounds, evidence summaries and toolkits.

The PEN® database is dynamic, constantly being updated in response to new practice questions submitted by users and new evidence that directs a change in current practice. The PEN® service is available as an individual or group license or through a site license for larger groups. A customized application has also been designed to support dial-a-dietitian contact centres (CC-PEN®). PEN currently serves as the knowledge repository for three provincial dietitian contact centres (British Columbia, Manitoba and Ontario; each providing support to PEN® through contractual collaborative agreements). The PEN service is now governed by a collaborative partnership comprised of the British Dietetic Association, the Dietitians Association of Australia and Dietitians of Canada. Other national dietetic associations have joined as partners including Dietitians New Zealand, the Irish Nutrition and Dietetic Institute and The Association for Dietetics in South Africa.

How Does Contact-Centre PEN® [CC-PEN] Differ from PEN®?

PEN® uses a powerful search engine designed to retrieve search results quickly and efficiently. This quick response is needed to support the busy practitioner and dietitians in contact centres who are working under even more limited time constraints, often with only a few minutes to identify a caller's needs and answer their questions. CC-PEN® provides access to all the regular PEN® content and tools as well as counselling tools and standardized responses for quality assurance. The PEN® database has an impressive track record, meeting over 90% of caller inquiries.

Other unique features of CC-PEN® include customization of advice according to geographical jurisdiction, branding of client materials, automated resource distribution and tracking, community referrals using geo-mapping, alert management and data collection and reports.

Unique Views of PEN®

PEN® has three unique “views” providing access to differing tool sets based on one’s security permission:

- a tool set to access the knowledge base and customize, print and email client/professional resources - applies to individual, group and site licensees
- a tool set to support CC-PEN® users - for contact centre applications
- a tool set to manage the content of the knowledge base - for administrators.

You will find out more about these unique views and how to use the customized tools in each of the User/Administrator Guides.

Supporting dietitians’ professional development and providing access to evidence-based standards and tools to sustain the profession and promote sound decision-making is a consistent priority for dietetic associations around the world.

2.0 Introduction

The purpose of this style guide is to provide guidance to Practice-based Evidence in Nutrition [PEN]® contributors and administrators on PEN® content format, grammar and referencing. It is recognized that there are a number of correct writing styles, including format, grammar and spelling. However, to promote consistency on the PEN® website, the PEN® standard will be the style outlined in this guide. Authors should follow this guide when developing PEN® content. The key references for this guide and for the formatting, grammar and spelling questions not addressed in this guide are the [Canadian Press Stylebook](#) and the [Canadian Press Caps and Spelling](#).

Editorial Process

Knowledge pathway submissions will be edited to conform to the PEN® style and space limitations. The editor and PEN® site administrators reserve the right to make editorial changes.

3.0 Writing Knowledge Pathways

Information captured in PEN® knowledge pathways is evidence-based information, based on research, best practices and/or the consensus of experts. This type of information is often presented in a research reporting style. PEN® information targets food and nutrition professionals who have a variety of research experiences. To meet the needs of the target audience, PEN® information is presented in a web-based reader-friendly style in which clear, plain language is preferred.

Plain Language

Plain language is presenting information in the simplest way possible for the target audience. In the case of PEN®, the target audience is mainly food and nutrition professionals. It can be assumed that the majority of readers share a basic understanding of food and nutrition vocabulary and concepts, but that there is a wide variance in reader skills, knowledge and experiences in the many aspects of food and nutrition and research terminology.

4.0 Knowledge Pathway Format

Each knowledge pathway is divided into sections as described below. Style points are listed where appropriate. A template for formatting a knowledge pathway is located in The PEN® Writer's Guide - Appendix Ib.

Practice Question(s)

Practice questions are organized as follows:

- key practice point(s): should be numbered with a period (1., 2., 3., etc.)
- grade of evidence ([A], [B], [C] or [D])
- evidence statements: each evidence statement should begin with an alphabetical bullet with a period (a., b., c., etc.)
- comments
- rationale
- references: each reference should begin with a numerical bullet with a period (1., 2., 3., etc.). Reference numbers in the evidence statements should be cited by the use of numbers within parenthesis at the end of the sentence before the period, such as (1). Do not use superscript. Multiple sequential referencing should be listed as the first and last number with a hyphen separating the two numbers, no spaces (e.g. 1-3). The order of the references in the evidence statements should correlate with the cited order of references in the reference section. See the complete description of referencing on page 9.
- key words: list all key words specific to the practice question, not the knowledge pathway, with no punctuation separating each word (e.g. infant feeding vitamin C iron). These words

will help PEN® users search for relevant information on the PEN® website. See the PEN® Key Word Determination Framework in Appendix I.

Practice questions should be **bolded**.

Evidence Summary

The author is not responsible for creating the evidence summary. It is created by a member of the PEN® team once the new or revised knowledge pathway is finalized.

The levels of evidence under the applicable evidence categories are organized using the following wording:

- [A] The following conclusions are supported by good evidence:
- [B] The following conclusions are supported by fair evidence:
- [C] The following conclusions are supported by limited evidence or expert opinion:
- [D] A conclusion is either not possible or extremely limited because evidence is unavailable and/or of poor quality and/or is contradictory.

Toolkit

See the PEN® Writer's Guide - Appendix 10 for the Toolkit Template.

Background

See the PEN® Writer's Guide - Appendix 8 for the Background templates: Disease-Related or Appendix 9 for Non-Disease Related Topic.

Related Tools and Resources

See the PEN® Writer's Guide - Section 4.11 and Appendix 18.

Glossary

Include a source/reference for each definition. Do not use a direct quote; paraphrase as needed.

Pathway Key Words

List all key words for the pathway with no punctuation separating each word (e.g. infant feeding vitamin C iron). The pathway key words should include only words that are applicable to the pathway and all of the questions/tools. Key words that are specific to a question or tool should only be included in the key word section of the relevant question or tool and not in the knowledge pathway key word list.

4.1 Font

Arial font Size 10 is the required font and size.

4.2 Spacing

Single spacing should be used throughout the text with the exception of spacing between sections. Double spacing should be used to separate key sections. Single spacing should be used between headings and text.

4.3 Headings

Headings may be used within PEN content (e.g. within evidence statements or comments, etc.) to provide additional clarity. If used, primary headings should be **bolded**. Secondary headings should be use *Italic bold* font and **bolded and underlined** should be used if a third level of headings is required.

4.4 Bullets

Bullets should be standardized as follows:

- first set of bullets

- second set of bullets (within first set of bullets)
 - third set of bullets (within second set of bullets).

4.5 Key Grammar Tips

Apostrophes

Apostrophes are used to indicate possession. An apostrophe before an added “s” is used to indicate possession, except in the case when the word ends in “s”. In the case when the word ends in “s”, the apostrophe is added to the end of the word and an additional “s” is not added. Examples are as follows:

the dietitian’s book
the dietitians’ books.

For the word “it”, an apostrophe should be used when “it’s” is used as a contraction of it is. When “its” is used to indicate ownership, then “its” should be used. Examples are as follows:

It's a lovely day.
That is its view.

Capitalization

Capitalization should be used for:

- proper names
- proper titles when associated with names
- names of provincial or federal departments or agencies
- companies
- religions
- languages
- the start of a sentence
- brand names
- the name of a recipe
- fruit and vegetable varieties, such as Granny Smith apple. However, do not capitalize the name of fruit or vegetable where the descriptive term is part of the name (e.g. french fries, brussel sprouts)
- the first word of botanical names, such as *Taraxacum officinale* (dandelion)
- P-value - should be written as *P*.

e.g./i.e.

The use of i.e. and e.g. can be confusing and there are several views on how best to use these abbreviations. For the use of PEN, e.g. should be used when examples are being provided and i.e. should be used to represent the words “for example” or “that is”; the latter being the proper translation for i.e.

Examples:

There are many types of cheese (e.g. cheddar, blue, cottage etc.)
One type of cheese (i.e. ricotta) is better for making lasagna.

In the examples above, e.g. in the first sentence refers to different types of cheeses - but other examples could be included. In the second example, i.e. refers to one specific type of cheese.

Gender

Use the terms, female or male, instead of woman or man, unless the term is being used to describe adults only. If necessary, he or she can be used when referring to a specific person.

Hyphens

Hyphens should only be used as follows:

- when the prefix ends in the same vowel as the word which follows, such as re-enter. This rule does not apply to words which are frequently used such as cooperate.
- when the main word starts with a capital, such as non-English
- certain compound adjectives, such as 40-year-old. This rule does not apply if the adverb ends with "ly", such as completely free of gluten. As a rule of thumb, a hyphen is needed between a phrase if two nouns are describing another noun, and are not separated by a comma such as wheat-free cookie.

Lists

Bulleted lists that are not sentences and are introduced by a colon should have no punctuation except for a period at the end of the last list item. Capitals should not be used for the beginning word of the bullet, unless a proper name is used. Bulleted lists that are sentences should have a period at the end of each sentence and the first letter of the first word in each bullet should be capitalized.

Examples

Foods high in fat include:

- peanut butter
- nuts
- bacon.

The following tips will help you to reduce your fat intake:

- Choose low fat milk.
- Limit fried food intake.
- Limit use of margarine.

Measurements

Measurements should be listed in metric. Imperial measurements can be included for clarity, but metric should be listed first. Measurements that are commonly used can be abbreviated. Examples include millilitre (mL), kilogram (kg), grams (g), milligrams (mg), pound (lb), tablespoon (Tbsp), teaspoon (tsp) and ounce (oz). Periods are not used to abbreviate measurements. Commas are not needed between measurements of two or more elements, such as a female 165 cm 70 kg.

Numbers

Words should be used to represent numbers from one to nine. Numbers should be used to represent numbers of 10 or more, unless the number is located at the start of the sentence. Numbers at the start of the sentence must be spelled out. A number consisting of two words, such as forty-two, should be hyphenated when written in words. A mixture of words and numbers can be used in a sentence which uses both numbers less than and greater than 10. If the numbers are part of a numerical measurement, such as grams, there is no need to spell out the numbers.

Percentages

Percentages should be listed with a number and the symbol % such as 2%.

Spelling

Only Canadian spelling will be used for all PEN-developed content with the exception of titles of KPs and KP-specific tool/resources that use the KP name in the tool/resource title (e.g. Background, Evidence Summary etc.).

Spelling rules pertinent to Canada include:

- Use “our” not “or” for words ending in “our” (e.g. colour, labour etc.).
- Use “e” not “ae” or “oe” for words that can use either. These words are typically medically related words such as pediatrician, esophagus and hematology.
- Use “re” not “er” in words ending in either, such as fibre.

In addition, the following words often have different spellings. The correct spelling for PEN® is below:

- breastmilk
- colour
- counselling
- cross-sectional
- decision-making
- follow up ((unless used to describe another noun (e.g. follow-up time, follow-up appointment)
- formula (plural formulas)
- labelling
- online
- post-mortem
- self-management
- side-effect
- tumour
- washout period

Symbols

If a symbol is used, such as greater than or equal than, plus/minus, the symbol should be chosen from the symbol menu as opposed to creating it with keyboard symbols and the underline font.

That/Which

The word “that” is typically used the majority of the time in sentence structuring. “That” is used when the clause is essential to the sentence. “Which” is used when the clause provides reason or another idea to the sentence. The use of “which” typically requires the use of a comma.

Example:

Eating Well with Canada’s Food Guide, which was revised in 2006, is the foundation for nutrition education in Canada.

The nutrition education handout that is used the most in Canada is Eating Well with Canada’s Food Guide.

Who/Whom

“Who” should be used when the related noun of the sentence is, or refers to, he, she or they. “Whom” should be used if the noun of the sentence is, or refers to, him, her or them.

Example:

The dietitian noted that the client, who had asked many questions about diabetes, is doing well.

The client talked to the dietitian whom she met last week.

4.6 Pathway References

Reference numbers in the evidence statements should be cited by the use of numbers within parenthesis at the end of the first sentence that refers to the material cited and should be before the period, such as (1). Do not use superscript. Multiple sequential referencing should be listed with the first and last number with a hyphen separating the two numbers, e.g. (1-3).

PEN® follows the Uniform Requirements style for references as follows:

- List all authors when six or fewer; when six or more, list only the first six and add "et al."
- Abbreviate periodical titles according to Index Medicus. If a title does not appear in Index Medicus, provide the complete title. The Journal of The Canadian Dietetic Association is abbreviated J Can Diet Assoc and the Canadian Journal of Dietetic Practice and Research is abbreviated Can J Diet Prac Res.
- A list of journal titles and abbreviations is available at:
<http://www.ncbi.nlm.nih.gov/entrez/linkout/journals/jourlists.cgi?typeid=1&type=journals&show=J&operation>Show>.
- A cited date is only needed when the content is subject to change and does not have a published copy (e.g. websites, wikis, PEN® content, etc.) and for personal communication.

If you are using reference citation software, choose 'National Library of Medicine' as the citation style. You will need to add the PubMed abstract link as shown in the examples below. Free reference citation software is available from: <http://www.mendeley.com/>.

Journal Article

American Heart Association Nutrition Committee; Lichtenstein AH, Appel LJ, Brands M, Carnethon M, Daniels S, Franch HA, et al. Diet and lifestyle recommendations revision 2006: a scientific statement from the American Heart Association Nutrition Committee. *Circulation*. 2006 Jul 4;114(1):82-96.
Abstract available from: <http://www.ncbi.nlm.nih.gov/pubmed/16785338>

The preferred electronic link is to the PubMed abstract. If it the web link is not available in PubMed, provide an alternative link. If the web link provided is for the abstract, state "Abstract available from:" prior to the web link. If only the citation is available, state "Citation available from:" prior to the web link. If the full article link is used, state "Available from:" prior to the web link.

DOI

If DOI is provided in the PubMed abstract, include as follows:

Di Ciaula A, Wang DQ, Bonfrate L, Portincasa P. Current views on genetics and epigenetics of cholesterol gallstone disease. *Cholesterol*. 2013;2013:298421. doi: 10.1155/2013/298421. Epub 2013 Apr 14. Abstract available from: <http://www.ncbi.nlm.nih.gov/pubmed/23691293>

Book

Gibson RS. Principles of nutritional assessment, 2nd ed. New York: Oxford University Press; 2005.

Chapter in a Book

Heubi J, Carlsson. Celiac Disease. In: Ekwall WS, Ekwall VK, editors. Pediatric nutrition in chronic diseases and development disorders. Prevention, assessment and treatment. 2nd ed. New York: Oxford University Press; 2005 p. 493-515.

Agency Publication

Health Canada. Nutrient value of some common foods. Ottawa: Public Works and Government Services Canada; 2008.

Electronic Material

Cite dates should be added to any electronic material that is not available in a hard copy.

Agency Publication

Health Canada. Nutrient value of some common foods. 2008. Available from: http://www.hc-sc.gc.ca/fn-an/nutrition/fiche-nutri-data/nutrient_value-valeurs_nutritives_e.html

Health Canada. Food allergy labelling. 2012 [cited 2015 Mar 1]. Available from: <http://www.hc-sc.gc.ca/fn-an/label-etiquet/allergen/index-eng.php>

Document/Book

Food and Nutrition Board, Institute of Medicine. Dietary Reference Intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. Washington, D.C.: The National Academies Press; 2005. Available from: <http://www.nap.edu/books/0309085373/html>

Website Material

No Author

Health Canada. Folic acid. December 2012 [cited 2015 Jan 4]. Available from: <http://www.hc-sc.gc.ca/index-eng.php>

With Author

Smith C. Folic acid. Health Canada [cited 2015 Jan 4]. Available from: <http://www.hc-sc.gc.ca/index-eng.php>

MeSH

The National Center for Biotechnology Information, [U.S. National Library of Medicine](#). Cytochrome p-450. MeSH (Medical Subject Headings). [cited 2014 Nov 29]. Available from: <http://www.ncbi.nlm.nih.gov/mesh/68003577>

PEN® Knowledge Pathway

If a PEN® knowledge pathway, practice question or tool/resource is referred to within another practice question or tool/resource, a link should be established at the practice point level when content is published. The wording should be as follows:

See Additional Content - Name of knowledge pathway or practice question or tool/resource, (e.g.

See Additional Content: [What is the effect of nutrition supplements on improved wound healing adults with diabetic foot ulcers?](#).

When PEN content is referenced, the following citation should be used:

Dietitians of Canada. <name / title of Knowledge Pathway / practice question / PEN tool or resource used>. In: Practice-based Evidence in Nutrition [PEN]. <date the Knowledge Pathway / practice question/ PEN tool or resource used was last updated>[<insert date cited>]. Available from: <http://www.dieteticsatwork.com/PEN/index.asp?msg>. Access only by subscription.

Example:

Dietitians of Canada. Is flax seed or flax seed oil safe to take during pregnancy? In: Practice-based Evidence in Nutrition [PEN]. 20013 March 17 [cited 2015 Jan 4]. Available from: <http://www.dieteticsatwork.com/PEN/index.asp>. Access only by subscription.

For other referencing situations, refer to the bibliography information from International Committee of Medical Journal Editors Uniform Requirements available at:
http://www.nlm.nih.gov/bsd/uniform_requirements.html.

5.0 Appendices

Appendix I - PEN® Key Word Determination Framework

Background

Key words are used within PEN® to assist both users and administrators in locating information. As the search element is integral to PEN®, it is very important that the key words accurately reflect content of the specific knowledge pathway, practice question or tool. The following guidelines are to assist authors and administrators in this process and to ensure consistency in how key words are determined and used.

Steps

- Each knowledge pathway will have core key words that will be used with any practice question or tool that falls under that specific knowledge pathway. Knowledge pathway core key words will be based on MeSH headings as well as recommended by the pathway author(s) and agreed upon by the PEN® team prior to the publishing of a new pathway (if possible). A record of these words will be distributed to the PEN® team by the editor and updated as needed.
- In addition, each practice question and tool/resource will be reviewed to see if other key words are needed. The following questions are suggested to guide this determination:
 - What other areas of food and nutrition are covered by this practice question or tool/resource? What are the common synonyms for these words? (e.g. heart/cardiac, obesity/overweight).
 - What other areas of health are covered by this practice question or tool/resource? What are the common synonyms for these additional words?
 - What is another common name for this type of tool/resource?
 - What are synonyms for the age or population group that is being targeted? (e.g. infant/baby; senior/older adult; teen/youth/adolescent)
 - What is the French term or what is the English term for a French tool/resource?
 - Are there other ways of spelling the key word? (e.g. Canadian, British American, Australian, New Zealand)
 - What are the short forms, acronyms or abbreviations that may not be in the title? (e.g. HACCP (Hazard Analysis and Critical Control Point))
 - Are there singular and plural forms of the word? (e.g. child/children)