

## Step 2 - Ask

It is important to frame the kinds of information you have identified in Step 1 into focused, searchable questions. Taking time to develop a structured question will help you define what to look for and where to look for evidence. To aid in this process three aspects to consider are 1) the type of question, 2) how questions are determined and 3) the framework that assists with question development.

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### 1. Type of Question

**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, prognosis, course etc. would be background questions.

Example: Are women with polycystic ovary syndrome (PCOS) at higher risk of co-morbid conditions than women without PCOS?

If your question is a background question, it may be more suited to a Background document rather than a practice question. Most PEN System background topics are reserved for non-clinical topics. For clinical topics, Practice Guidance Toolkits support this information through nutrition care process terminology steps/categories. Consult your PEN<sup>®</sup> Team mentor. Templates are available for [clinical](#) and [non-clinical](#) background topics.

**Foreground** questions generally relate to more specialized knowledge that address issues of care, and/or decision-making. Foreground questions usually ask about assessment, treatment and prevention; prognosis is often found in background content, but may be addressed on occasion. The primary focus of PEN practice questions are *foreground* questions to support dietetic practice.

Example: Are there any dietary supplements that can help manage symptoms and co-morbidities of polycystic ovary syndrome (PCOS)?

### 2. Question Determination

Within a Knowledge Pathway (KP), determining what practice questions to include requires consideration of the following factors:

*a. Relevance*

After considering the relevance of the topic to practice in [Step 1- Assess](#) we now need to consider evidence related to a relevant intervention (e.g. core dietary issue within a dietitians' scope of practice) and outcomes that are important to patients. For practice questions, relevant outcomes that are important to patients include nutrition care outcomes that are relevant to the nutrition diagnosis, intervention plans and goals. These include morbidity- and mortality-related outcomes, functional outcomes and quality of life and not necessarily surrogate outcomes along the causal pathway (i.e. risk factors, biomarkers). See Appendix 1 – Decision tree for Triaging PEN Practice Questions to be updated/developed.

*b. Equity, Diversity and Inclusion*

Consider issues relating to equity, diversity and inclusion (EDI) when developing practice questions and assessing evidence from the literature. EDI may be overlooked in research design, study implementation and scientific reporting, as well as in general science communication. Researchers are now being asked, for example, to embed gender-based analysis plus (GBA+) into the design of their research – this includes gender as well as diversity and identify factors (e.g. age, culture, disability, education, ethnicity, gender expression and gender identity, immigration and newcomer status, Indigenous identity, language, neurodiversity, parental status/responsibility, place of origin, religion, race, sexual orientation and socioeconomic status) (3). Lack of information accounting for these differences can limit the generalizability of research findings and their applicability to dietetic practice. If these aspects are not presented in the literature this may be discussed as potential limitations of the evidence in the PEN KP.

Including patient/client involvement in research development and communication in guideline development is strongly encouraged by national research institutions to ensure the research being conducted is relevant and valuable to patients and to address potential inequity issues (4). It is important for PEN content to consider patient-important outcomes, and hence the questions being asked need to reflect patient or client needs. Consult with your PEN Team mentor if there is content for which you feel that stakeholders, such as patients, should have a voice in the question determination and development.

*c. Stakeholder Engagement*

Engaging stakeholders to help define the background and KP practice questions is important. This process is led by the PEN Content Manager/staff who consult with PEN partners, call centres and/or users to seek their input on current and proposed new questions, as well as to request information about existing guidelines.

### 3. Question Development Framework

To develop an effective question to help guide the evidence gathering and summary process, an array of useful techniques such as mind mapping, brainstorming or focus groups are available (5). One helpful approach to transforming a research idea into a research question using the PICO or PI(E)CO(TS) format (6,7). As noted by the letters in brackets, there are multiple variations of this mnemonic that are commonly used, the following provides the most inclusive description. PI(E)CO(TS) serves as a mnemonic for Population/Patients/Problem, Intervention/Exposure, Comparison, Outcome, Timeframe and Setting/Study Design.

**Note:** For PEN content, practice questions may need to be broader to reflect the evidence base and may exclude specific details on outcome, timeframe and setting/study design.

a. *The PI(E)CO(TS) Process*

Research queries begin using an evidence-based practice framework developed from a well-constructed question. The mnemonic PI(E)CO(TS) can be used to create a clear structured question and helps make finding evidence easier and strengthens the type of evidence gathered (5,6). PI(E)CO(TS) stands for:

- P (Population, patient or problem) - how would you define your population e.g. demographics, medical condition?
- I (Intervention or Exposure of interest) - what are the intervention (for trials) or exposure (for observational studies) or diagnostic/prognostic factors?
- C (Comparison or control) - is there an alternative, placebo or standard practice to compare to? What comparison is relevant? What is the control comparison?
- O (Outcome or Objective) - what do you hope to accomplish, improve or effect? What outcome is important to your patients/clients?
- T (Time frame) - how long with it take to reach the desired outcome?
- S (Setting or Study type) - where is this information relevant to real world use e.g. inpatient, outpatient, rural, urban or a specific part of the world? This could also refer to the study design, such as meta-analysis, systematic review, randomized controlled trial, cohort study, case-control study and case report.

For PI(E)CO(TS), the E is noted in brackets because if observational studies are included there is no intervention, but an exposure of interest. T and S are noted in brackets because they are not always included or necessary depending on the question. Often the setting is considered real world/outpatient, globally and includes evidence from any type of study design using the hierarchy of evidence to guide evidence selection and evaluation, unless specifically noted. The hierarchy of evidence is further described in the section by the same name in the PEN [Research Methods](#) background document.

Using PI(E)CO(TS) 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.

b. *Question Template Examples*

For etiology related questions addressing the causes or origin of disease, the factors that produce or predispose toward a certain disease or disorder (i.e. background questions):

Are \_\_\_\_\_ (P) who have \_\_\_\_\_ (I/E) at \_\_\_\_\_ (increased/decreased) risk for/of \_\_\_\_\_ (O) compared with \_\_\_\_\_ (P) with/without \_\_\_\_\_ (C) over \_\_\_\_\_ (T)?

Example: Are children (P) who have high free sugar intake ( $\geq 10\%$  of total energy intake) (I/E) at increased risk of obesity (O) compared with children without high free sugar intake ( $< 10\%$  of total energy intake) (C) between the ages of five and 18 (T)?

Are \_\_\_\_\_ (P) who have \_\_\_\_\_ (I) compared with those without \_\_\_\_\_ (C) at \_\_\_\_\_ risk for/of \_\_\_\_\_ (O) over \_\_\_\_\_ (T)?

Example: Are adults (P) with vitamin B6 deficiency (I/E) compared with those without vitamin B6 deficiency (C) at increased risk for Alzheimer's disease (O) over the course of their lifetime (T)?

For questions addressing the prevention or treatment of an illness or disability (i.e., foreground questions):

For \_\_\_\_\_ (P) does the use of \_\_\_\_\_ (I) reduce the future risk of \_\_\_\_\_ (O) compared with \_\_\_\_\_ (C)?

Example: For critically ill [inpatient (S)] adult patients (P) does the use of early enteral feeding (I) reduced the length of hospital stay (O) compared with delayed feeding (C)?

Does \_\_\_\_\_ (I) influence \_\_\_\_\_ (O) in patients who have \_\_\_\_\_ (P)?

Example: Does sodium reduction (I) influence blood pressure (O) in adults with hypertension (P)?

In \_\_\_\_\_ (P), how does \_\_\_\_\_ (I) compared to \_\_\_\_\_ (C) influence \_\_\_\_\_ (O)?

Example: In adults 65 years and older with diabetes living in rural areas (P), how does the use of virtual nutrition appointments (I) compared to in-person appointment with a dietitian (C) affect glucose control (O)?

In \_\_\_\_\_ (P), how does \_\_\_\_\_ (I) compared to \_\_\_\_\_ (C) affect \_\_\_\_\_ (O) within \_\_\_\_\_ (T)?

Example: In restaurant patrons of any age (P), how does the display of energy content information on menus (I) compared to no display of nutritional information (C) affect dietary choices (O) during the dining experience (T)?

In \_\_\_\_\_ (P), what is the effect of \_\_\_\_\_ (I) on \_\_\_\_\_ (O) compared with \_\_\_\_\_ (C) within \_\_\_\_\_ (T)?

Example: In pregnant women (P), what is the effect of zinc supplementation (I) on fetal growth and development (O) compared with no supplementation (C) at birth and in childhood (T)?

#### 4. Supporting Resource

The *PEN<sup>®</sup> Writer's Training Modules* includes a presentation module, as part of a series of modules on the evidence-based practice information cycle, on [Asking the Question](#) that provides a summary of asking questions to find good quality, relevant research efficiently that will lead to sound evidence-based answers to resolve practice related problems and improve patient/client outcomes.

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**Appendix 1. Decision tree for triaging PEN Practice Questions to be updated/developed**

Feb. 2019 version (after receiving feedback on questions from partners)

1. Is it a foreground question?
  - If no, can a link be added to a Background document or Practice Guidance Toolkit that incorporates the content? (consider online sources as shown in [PEN Background Resources](#))
2. Can any similar PICO questions be combined?
  - Consider broader, patient important outcomes (e.g. mortality, morbidity, functional status, quality of life) rather than every reported outcome. Use surrogate outcomes (e.g. biomarkers, bone density) only if no information is available on patient important outcomes.
  - Refer to International Consortium of Health Outcomes: <https://www.ichom.org/standard-sets/>.
3. Is the question relevant?
  - Consider whether it focuses on a core dietary issue and is within dietitians' scope of practice.
  - Consider Modified Splett criteria (e.g. **meets at least 3 of the following**). Does the topic:
    - Substantially improve patient/client outcomes?
    - Affect a large or vulnerable client population?
    - Affect overall policy & administration?
    - Reduce health system costs?
    - Decrease practice uncertainty?
  - If not relevant, a comment can be added to archive the question. If it is a medically-focused question, a link can be added to the Background document