

The College of
Family Physicians
of Canada




Le Collège des
médecins de famille
du Canada



Self Learning[®]

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GUIDE TO WRITING QUESTIONS

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INTRODUCTION

The College's Self Learning program evolved out of methods developed for processing multiple-choice questions for the Certification Examination in Family Medicine. The program was first published in November 1972 in *Canadian Family Physician*. The responses and the participants' reaction to the first issue started a process of evolution and development of the program, which has continued until the present.

The continuing improvement of the program has resulted from the desire of the members of this committee to make it more meaningful and useful to family physicians across Canada. The relevance of this program can only be maintained as long as family physicians in every part of the country continue to contribute questions for the program.

The purpose of this kit is to give you guidelines as to the procedures for developing these questions. Hopefully it will be useful in understanding the committee organization and will serve as a reference while you are actually preparing questions.

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TERMS OF REFERENCE

The committee has developed a set of objectives to guide and direct activities. These were approved by the College's Board of Directors in May of 1974 as the "Terms of Reference" under which the committee operates:

1. To make available to members of the College and other family physicians, educational programs for the purpose of stimulating self-education and self-evaluation; these programs are to be used only for educational purposes.
2. To develop new methods of self-assessment and self-evaluation.
3. To cooperate with other educational committees of the College in integrating educational policy of the College.

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SELF LEARNING BACKGROUND INFORMATION

The Self Learning Program is written by a group of family physicians from across Canada. Committee members are all in active practice in rural and urban centers. The committee consists of the chairperson, a representative from the Section of Residents and 9 regional chairs who represent approximately 50 question writers nation wide.

Question Preparation

The committee members receive subscriptions to two summary journals: *Journal Watch* and *Evidence Based Practice*.

With the development of an Internet version of the Self Learning program, an online question creation tool was created allowing question writers to submit their questions electronically directly into a central database. A link to this program is found on www.cfpc.ca/sli at the bottom of the page under Committee Resources. It is called Administration Tools for Program Production and is password protected. Passwords are granted upon request to active question writers.

This does not alter the need for local and national review meetings.

Local Reviews

Regional chairs and question writers review the literature, select journal articles and write questions with accompanying educational points. These questions are collected and reviewed at local Committee meetings at least three times per year. The actual number depends on the committee. The questions that pass through these reviews are then sent to the College for inclusion in the national reviews, which take place three times per year; February, June and October.

National Reviews

The purpose of the national review is to obtain enough good questions and short answer management problems for the publication of the following two issues of the program. All questions submitted for review are precirculated approximately 10 days before the meeting to give committee members an opportunity to familiarize themselves with the questions before discussing them at the meeting.

The committee is divided into two groups, each reviewing the questions written by the members in each group and the local groups they represent. These questions are reviewed, discussed and, if necessary defended by the chairs of the local question-writing groups. The regional chair knows the content of these questions, as he or she has been a part of a local review where the questions have already been discussed and defended once. Questions are accepted as they are, with editorial changes or they are rejected.

Duplicate questions arise when more than one question is written on the same article and the content or focus of the questions is similar enough as to not warrant two questions. Some of these questions are rejected, some are accepted with editorial changes and some are combinations of the best parts of each question.

The Business Meeting

The business meeting is generally held following lunch on the first day of the two-day meeting. Two committee members are assigned to do a post-publication review of the two most recent issues at each meeting. Correction notices are occasionally published because of errors found in these internal reviews.

Each regional chair reports on the progress of their group and other business matters are discussed.

An educational seminar or workshop is also incorporated into the business meeting giving committee members additional skills that they can bring back to their regional groups.

QUESTION WRITING

The main point that every question writer must remember is that the purpose of every question is to educate participants.



Question Structure

Questions can be structured in three ways for the Self Learning Program:

1. **Single best answer type:** a "stem" question is devised with four possible answers or responses with only one response being correct. The wrong answers are called distractors. They should not be too obviously wrong, but attempt to "make a point". These multiple choice type questions may consist of either three false distractors and one true answer or three true distractors with one false answer.
2. **True-False:** these questions are usually the easiest to write, but often the least educationally stimulating. They should be kept to a minimum.
3. **Short Answer Management Problem (SAMP):** these questions usually start with a patient in a specific clinical situation. Using a sequence of questions, they take the participant through a typical problem solving process. They are the most challenging to write and are generally written by the most experienced question writers.

Each question is followed by a reference to the article on which the question was based and an Educational Point.

Questions prefaced by a brief summary of a clinical situation are often well received.

Try to choose questions from current, high quality articles, with well-designed studies.

The best questions (also the most difficult to write) demand some process of problem solving or total situation evaluation as opposed to simple recall.

Guidelines for Selecting Articles

When choosing an article on which to base a question there are a number of things to think about:

1. The article is on a common or important topic and is relevant to family practice.
2. The article offers new knowledge or meets a deficiency in the knowledge of the reader (i.e., question writer).
3. The article is either based on original research or is a review article.
4. If the article is based on original research, determine that the methodology is good.
5. If the article is a review article, look for an article that is focused on a particular topic area, rather than an article that tries to do too much or cover too much territory.
6. The references on which the articles are based must be adequate and appropriate: they must be sufficient to cover the topic adequately and they should be clinically relevant to the topic.
7. The article itself should contain a good description of the literature search done to prepare the article.
8. The journal from which the article is taken should be a peer-reviewed journal and preferably in common circulation.
9. The article should have been published within the last year - the program tries not to publish any material that is more than two years old at the time of publication.
10. Try to broadly review the literature (i.e., use a variety of journals) as this helps to avoid duplication of questions.

Guidelines for Writing Good Questions

Once a question has been written, you should ask these questions:

1. Is the purpose (objective) of the question clear?
2. Is the item based on a single central problem or objective?
3. Do the important elements of the problem appear early in the statement of the questions?
4. Is there an unnecessary repetition of words in the response that could be included in the stem?
5. Does the item contain any double negatives in either the stem or the response?
6. Are all responses grammatically consistent with the stem?
7. Are all responses parallel in form? (e.g., singles words, phrases, complete sentences, etc...)
8. Are all responses independent of each other?
9. Are any inclusive or exclusive expressions such as "never", "always", "all", etc... used in such a way as to not cue the person answering the question?
10. Is the punctuation correct?
11. Are all items written in clear and simple language with vocabulary kept as simple as possible?
12. Are all responses plausible and attractive to our subscribers who might lack the information or ability tested by the item?

Guidelines for Writing Good Educational Points

Educational Points are an integral part of a well-structured question. Question writers should spend some time ensuring that their Educational Points are well designed to meet the goal of educating our subscribers.

Most of the text of the Educational Point should be taken word for word from the article.

Once the Educational Point has been written you should ask these questions:

1. Are each of the distractors discussed adequately in the Educational Point?
2. Is the reasoning for the answer clearly stated in the Educational Point?
3. Does the Educational Point flow logically from beginning to end?
4. Is there an introduction to the topic at the beginning of the Educational Point?
5. Are important points regarding the topic which couldn't be included in the question itself included in the Educational Point.?
6. Is there enough material presented to give a good overview of the topic?
7. Is the Educational Point too wordy? (i.e., does it include a great deal more information than is dealt with by the question?)

EXAMPLES

Single Best Answer

Epstein-Barr virus

Each of the following statements about the treatment of uncomplicated infectious mononucleosis is true, *except*:

1. Acyclovir reduces viral shedding.
2. Acyclovir shortens the duration of oropharyngeal symptoms.
3. Corticosteroids shorten the duration of oropharyngeal symptoms.
4. Corticosteroids are not recommended.

Reference Cohen JI. Epstein-Barr virus infection. *N Engl J Med* 2000;343:481-92.

Educational Point Epstein-Barr virus (EBV) is a member of the herpesvirus family. It is one of the most successful viruses, infecting over 90% of humans and persisting for the lifetime of the person.

EBV was discovered 36 years ago by electron microscopy of cells cultured from Burkitt's lymphoma tissue by Epstein, Achong and Barr. Four years later, in 1968, EBV was shown to be the etiologic agent of heterophile-positive infectious mononucleosis (IM). EBV DNA was detected in tissues from patients with nasopharyngeal carcinoma in 1970. In the 1980s, EBV was found to be associated with non-Hodgkin's lymphoma and oral hairy leukoplakia in patients with acquired immunodeficiency syndrome. Since then, EBV DNA has been found in tissues from other cancers, including T-cell lymphomas and Hodgkin's disease.

Whereas most EBV infections of infants and children are asymptomatic or have nonspecific symptoms, infections of adolescents and adults frequently result in IM. Over 50% of patients with IM manifest the triad of fever, lymphadenopathy, and pharyngitis; splenomegaly, palatal petechiae, and hepatomegaly are each present in over 10% of patients. Most patients have leukocytosis with an absolute increase in the number of peripheral mononuclear cells, heterophile antibodies, elevated serum aminotransferase levels, and atypical lymphocytes. Most of the symptoms of IM are attributed to proliferation and activation of T cells in response to the infection.

No specific therapy is indicated for most patients with IM. Although **acyclovir inhibits EBV replication and reduces viral shedding, it has no significant effect on the symptoms of IM (which are primarily due to the immune response to the virus) and is therefore not recommended. Corticosteroids shorten the duration of fever and oropharyngeal symptoms associated with IM; however, they are generally not recommended for the treatment of uncomplicated disease.** Corticosteroid therapy should be considered for patients with severe complications of IM, such as impending upper-airway obstruction, acute hemolytic anemia, severe cardiac involvement, or neurologic disease.

Chronic active EBV infection is a very rare disorder that has been defined by the presence of three features: severe illness of more than six months' duration that begins as a primary EBV infection or that is associated with abnormal EBV antibody titers; histologic evidence of organ disease, such as pneumonitis, hepatitis, bone marrow hypoplasia, or uveitis, and demonstration of EBV antigens or EBV DNA in tissue. There are often extreme elevations of virus-specific antibody titers. In contrast, chronic fatigue syndrome is a different disorder in which patients can have slightly elevated antibody titers to EBV and other viruses. Correct answer is 2.



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True-False

Infant Vaccinations

Infants receiving routine vaccinations with 25 mm (1") needles have *fewer* local skin reactions than do infants receiving vaccinations with 16 mm (5/8") needles.

1. True
2. False

Reference Diggle L, Deeks J. Effect of needle length on incidence of local reactions to routine immunisation in infants aged 4 months: randomised controlled trial. *BMJ* [serial online] 2000 [cited 2000 Oct 14];321. Available from: URL: <http://www.bmj.com/cgi/content/full/321/7266/931>

Educational Point The authors conducted a randomized trial to evaluate the relationship of needle length to local skin reactions after routine infant vaccination. Infants in Buckinghamshire were randomized to receive their third primary vaccination (at the fourth month) with either the 16 mm (5/8") or the 25 mm (1") needle. Parents measured redness, swelling, and tenderness, with a ruler, and the child's reaction to arm movement was graded on a standard scale.

The authors noted that the question of optimum needle length for infant immunization has not previously been addressed in Britain, despite calls from nurses for evidence on which to base immunization practice. As well, previous local reactions have been cited by parents as a disincentive to further vaccinations.

Over half of the infants vaccinated with the 16 mm needle experienced redness and swelling. The rate of redness with the 25 mm needle was initially one third less than the rate with the 16 mm needle. Similarly, rates of swelling after injection with the longer needle were initially two thirds less than those seen with the shorter needle, and this difference was maintained for the three days. For every five infants vaccinated, the use of the longer needle would prevent one infant from experiencing any local reaction.

Correct answer is 1.

Short Answer Management Problem

Lucy Evans, a 23-year-old patient with a history of chronic, moderately severe asthma, has been discussing starting a family with her husband. She is uncertain about what impact pregnancy might have on the disease and has booked this office appointment to find out more.

1. What can you tell her about the course of asthma during pregnancy and in the postpartum period?

Lucy's asthma is currently well controlled. You explain that good control of asthma is essential for maternal and fetal well-being and that chronically poor control is associated with several maternal and fetal problems.

2. List three of these problems.
 - i.
 - ii.
 - iii.
3. Lucy wonders if it is safe to continue using her Ventolin[®] puffer during pregnancy.
 - i. Yes
 - ii. No
4. Is the same true about her inhaled budesonide therapy?
 - i. Yes
 - ii. No

You go on to tell her that the use of oral corticosteroids may worsen maternal morbidity, although it is not evident whether this is due to direct pharmacologic effect or because they are a marker for worse disease.

5. List two maternal health problems that are associated with corticosteroid administration.
 - i.
 - ii.
6. Lucy's mother uses theophylline and Lucy would like to know if it is safe in pregnancy.
 - i. Yes
 - ii. No
7. What happens to theophylline clearance during the third trimester?

Lucy leaves the office reassured, understanding that women whose asthma is well controlled during pregnancy have outcomes as good as do their non-asthmatic counterparts.

Reference Tan KS, Thomson NC. Asthma in pregnancy. *Am J Med* 2000;109:727-33.

Educational Point Although about 1% of pregnant women have asthma, it is often under unrecognized and suboptimally treated. **The course of asthma during pregnancy varies: it improves, remains stable, or worsens in similar proportions of women. The risk of an asthma exacerbation is high immediately postpartum, but the severity of asthma usually returns to the preconception level after delivery and often follows a similar course during subsequent pregnancies.**

Acute asthmatic attacks can result in dangerously low fetal oxygenation. Chronically poor control is associated with pregnancy-induced hypertension, pre-eclampsia and uterine hemorrhage, as well as greater rates of cesarean section, preterm delivery, intrauterine growth retardation, low birth weight, and congenital malformation.

Women whose asthma is well controlled during pregnancy have outcomes as good as those in their non-asthmatic counterparts. Inhaled β_2 -adrenoceptor agonists are the most frequently used asthma treatment. **Two studies have examined the effects of short-acting agents. No adverse effects on rates of congenital malformation, perinatal mortality, and low birth weight or complications of labor and delivery were observed, and it has been concluded that these drugs are safe in pregnancy. Little is known, however, about the safety of long-acting β_2 -adrenoceptor agonists (e.g. salmeterol and formoterol).**

Inhaled beclomethasone and budesonide have been widely used during pregnancy and both appear to be safe. There are few studies, however, on the use of flunisolide or fluticasone during pregnancy. Thus it would seem prudent to initiate treatment with either inhaled beclomethasone or budesonide.

Corticosteroids may worsen maternal morbidity, especially among patients who require oral administration for severe asthma. Their use has been associated with gestational diabetes, pregnancy-induced hypertension and antepartum and postpartum hemorrhage. However, not all studies have reported an association with uterine hemorrhage or pre-eclampsia. If corticosteroids do increase maternal morbidity, it is not evident whether this is due to a direct pharmacologic effect or because they are a marker for worse disease.

Current evidence suggests that theophyllines are safe in pregnancy. Clearance may be reduced by 20-35% during the third trimester, however, requiring close monitoring of serum levels. The use of intravenous aminophylline has no additional benefit over systemic corticosteroids in the treatment of acute asthma in pregnant women. Studies of oral theophylline during pregnancy have had conflicting results and are of little practical help.

Acceptable Answers

1. The cause of asthma varies; it improves, remains stable or worsens in similar proportions of women. The risk of an asthma exacerbation is high immediately postpartum, but the severity of asthma usually returns to the preconception level after delivery, and often follows a similar course during subsequent pregnancies.
2. Pregnancy-induced hypertension
Pre-eclampsia
Uterine hemorrhage
Greater rates of cesarean section
Preterm delivery
Intrauterine growth retardation
Low birth weight
Congenital malformation
3. Yes
4. Yes
5. Gestational diabetes
Pregnancy-induced hypertension
Antepartum hemorrhage
Postpartum hemorrhage
6. Yes
7. It may be reduced by 20-35%.