

Excellence in Clinical Pharmacy Practice  
(ECPP)

# Drug Information Questions & Answers

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# Question 1



A colleague tells you about a poster on the advantages and disadvantages of the Baxter IV pump specifically for pediatric patients in the Intensive Care Unit (ICU). The poster was presented at an annual national pharmacy meeting. Which one of the following sources would be best to find this poster?

- A. IDIS.
- B. IPA.
- C. MEDLINE.
- D. Ovid.

# Answer 1



## Answer: B

IPA is the best answer because it contains information specific to pharmacy as well as information presented at a pharmacy scientific meeting. Since this question requires information specific to an IV pump, the best source would be one that contains information specific to pharmacy. Ovid (Answer D) is a platform for MEDLINE (Answer C) which contains primary medical literature. IOWA also contains information regarding the primary medical literature.

## Question 2



A physician requests a brief summary of a new antidepressant, vilazodone. The pharmacist answering this question has not heard of this drug. Which one of the following resources is best to consult for this information?

- A. MEDLINE, in-process
- B. IDIS
- C. PubMed
- D. IPA

# Answer 2



## Answer: A

MEDLINE, in-process is the best answer because this source contains those records that are not yet indexed with Medical Subject Heading (MeSH) terms. Since the pharmacist has not heard of the drug and the physician states the drug is new, one can assume that any information contained in MEDLINE is new. IDIS, PubMed and IPA do not publish in-process papers and posts papers once publication occurs.

# Question 3



A MEDLINE search using the MeSH terms for stroke and aspirin is conducted to find information on whether every woman over the age of 55 years should take low-dose aspirin for stroke prevention. In addition to this approach, which search strategy would best minimize the retrieval of erroneous data?

- A. Using the keyword word search of “aspirin AND stroke”.
- B. Using the subheading “therapeutic use”.
- C. Limiting the sex to “female”.
- D. Restricting the publication type to “review”.

# Answer 3



## Answer: C

The best step to take to limit erroneous data is to limit the sex to female. This would limit the MeSH for aspirin AND stroke to only those studies that included females. Using the subheading “therapeutic use” (Answer B) would not limit the data as much as restricting the search to the female gender since the question was specific to information in women. A restriction to publication type of “review” (Answer D) may limit the search too much and cause one to miss pertinent articles. Using a keyword search provides too many hits that are irrelevant and is not time efficient (Answer A)

## Question 4



Which mobile application for a personal digital assistant (PDA) or smart phone would most efficiently and effectively identify if simvastatin, benazepril, hydrochlorothiazide, and omeprazole will interact with clarithromycin?

- A. MobileMicromedex.
- B. Clinical Pharmacology OnHand.
- C. Epocrates.
- D. Lexi-Drugs.

# Answer 4



## Answer: A

MobileMicromedex contains all features of the desk top version of Micromedex. The other mobile platforms for Clinical Pharmacology, Epocrates (Answer B), Epocrates (Answer C), and Lexi-Drugs (Answer D) are currently limited and do not contain a specific drug interaction tool.

## Question 5



A pharmacist is researching MEDLINE for the dose of gabapentin for treatment of spasticity in a 36-year-old woman newly diagnosed with multiple sclerosis. If using the MEDLINE terms “gabapentin” AND “spasticity,” which one of the following limit functions would best help narrow results and limit erroneous results?

- A. Human.
- B. English only.
- C. Human and English only.
- D. Clinical trials.

# Answer 5



## Answer: C

Restricting the search to Human and English only will result in the most efficient search strategy. Articles to be reviewed are those written in the English language in which Human subjects were tested. To limit to only clinical trials (Answer D) could result in selection of animal data.

## Question 6



A medical resident has requested information on a recent news story regarding the depletion of magnesium by proton pump inhibitors. She requests more information as to the clinical presentation as well as the incidence of this depletion in patients. Which one of the following would be the best Internet source to find this information?

- A. *[www.clinicaltrials.gov](http://www.clinicaltrials.gov).*
- B. *[www.fda.gov](http://www.fda.gov).*
- C. *[www.mayoclinic.com](http://www.mayoclinic.com).*
- D. *[www.clinicalevidence.com](http://www.clinicalevidence.com).*

# Answer 6



## Answer: B

Answer B is correct because the FDA Web site is going to have the most current ADR information that is either being reported by manufacturers or is detected via the pharmacovigilance program. The FDA site is a good site as a clinician to have e-mail alerts sent when new ADRs are reported. <http://www.fda.gov/Drugs/DrugSafety/ucm245011.htm> Answer A, [www.clinicaltrials.gov](http://www.clinicaltrials.gov), is not the best answer because usually these ADRs are not reported through a clinical trial. Although [clinicaltrials.gov](http://www.clinicaltrials.gov) does have safety trials and this would be a good source to look at later in your searching strategy but it is incorrect because it is not considered a first-line resource for this question. For the PPIs and magnesium, there are case series and observational studies published in the literature starting in 2006 so a Medline search would show results but none were clinical trials and a search of [clinicaltrials.gov](http://www.clinicaltrials.gov) through June 2011 results no trials found. Answer C, [www.mayoclinic.com](http://www.mayoclinic.com), is incorrect because this site is meant for health care consumers versus information for the health care professional. Answer D, [www.clinicalevidence.com](http://www.clinicalevidence.com), would be incorrect because [clinicalevidence.com](http://www.clinicalevidence.com) provides guidelines and does not have cutting edge safety data on the site.

# Question 7



A 54-year-old woman has a 10-year history of relapsing, remitting multiple sclerosis. She has either not tolerated or failed all commercially available drug therapy options. The patient lives in rural Montana and has limited travel and medical resources. She is interested in trying to find a clinical trial that she might be eligible for that could provide some other therapeutic options. Which one of the following Web sites would provide her with the best options?

- A. WebMD.
- B. [www.clinicaltrials.gov](http://www.clinicaltrials.gov).
- C. [www.fda.gov](http://www.fda.gov).
- D. [www.controlled-trials.com](http://www.controlled-trials.com).

# Answer 7



## Answer: B

Clinicaltrials.gov will provide the best resource to find clinical trials in the area of multiple sclerosis that might be available in the United States due to this patient's travel and medical expenses. Clinicaltrials.gov does cover trials from other countries but it provides a means to search within the United States by city and/or state. It also provides information on what type of patients would be eligible for the trials. If she has failed on interferons then the patient would be able to identify those trials that are using interferons and know those would not be an option. Answer A, WebMD, would be incorrect because WebMD is not the best resource to find information on investigational trials around the country. It is better suited for consumer educational purposes. Answer C is incorrect because the FDA

## Cont. answer 7



Web site is not the best resource for finding clinical trials. Answer D is a choice that could be considered but is incorrect when compared to [clinicaltrials.gov](http://clinicaltrials.gov). [Controlled-trials.com](http://Controlled-trials.com) actually contains [clinicaltrials.gov](http://clinicaltrials.gov) with other international registries. However, this site is much more complicated and harder to search. It does allow you to just search [clinicaltrials.gov](http://clinicaltrials.gov) as an option. An internet search took 5 times longer to search [clinicaltrials.gov](http://clinicaltrials.gov) compared to search [clinicaltrials.gov](http://clinicaltrials.gov) through [controlled-trials.com](http://controlled-trials.com). Since this patient is looking for trials in the United States then [clinicaltrials.gov](http://clinicaltrials.gov) makes more sense from an efficiency standpoint.

## *Questions 8-11 pertain to the following case.*



The Cochrane Library (Cochrane Database of Systematic Reviews) published a systematic review on the use of supplemental selenium in the prevention of cancer. The review was published in May of 2011 and included all pertinent clinical trials as of April 5, 2011. The review included 49 prospective observational studies and six randomized controlled trials (RCTs). In epidemiologic data, the review reported a reduced cancer incidence (odds ratio [OR] of 0.69 (95% confidence interval [CI] 0.53-0.91) and mortality (OR 0.55, 95% CI 0.36-0.83) with higher selenium exposure. The cancer risk reduction was more pronounced in men (incidence: OR 0.66, 95% CI 0.42-1.05) than in women (incidence: OR 0.90, 95% CI 0.45-1.77). The authors of the review stated that no reliable conclusions can be drawn regarding a causal relationship between low selenium exposure and an increased risk of cancer. They also summarized that the effect of selenium supplementation yielded inconsistent results in RCTs, and that to date there is no convincing evidence that selenium supplements can prevent cancer in men, women, or children. In addition, the results of the Nutritional Prevention of Cancer Trial (NPCT) and the Selenium and Vitamin E Cancer Prevention Trial (SELECT) raised concerns about possible harmful effects of selenium supplements.

# Question 8



A 47-year-old man has read recent information that selenium supplementation can decrease his risk of prostate cancer. His family history of prostate cancer includes his father, grandfather, and older brother, who all three developed prostate cancer in their 50s. The patient currently has a prostate-specific antigen test with his yearly physical, which includes a digital rectal examination of the prostate. He takes a daily multivitamin that contains 55 mcg of selenium. Based on the results of the Cochrane Review, which one of the following is the best advice for this patient?

- A. Continue the daily multivitamin that contains the RDA for selenium.
- B. Add an additional selenium supplement to the multivitamin to reach a daily dose of 200 mcg per day.
- C. Discontinue the daily multivitamin and increase his daily selenium to 400 mcg per day with nutritional milkshake supplements.
- D. Discontinue the current brand of multivitamin and find a supplement that does not contain selenium.

# Answer 8



## Answer: A

Answer A is correct because providing the RDA for selenium each day is consistent with the findings from the Cochrane review. The data suggests that there is no benefit when exceeding the RDA especially when patients are taking doses that exceed 200 mcg/ per day which is why Answers B and C would be incorrect. Based on the evidence from Cochrane and the SELECT trial, one could argue that this level of supplementation of selenium is putting them at an increased risk. Lippman SM, Klein EA, Goodman PJ, Lucia MS, Thompson IM, Ford LG, et al. Effect of selenium and vitamin E on risk of prostate cancer and other cancers: the Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA* 2009;301(1):39-51. Answer D is incorrect because the data does not suggest that selenium has to be completely removed when it is given at the RDA levels.

# Question 9



The conclusions of the Cochrane authors seem inconsistent with the OR reported for both cancer incidence as well as mortality. What is the best explanation as to why the reviews indicated that there is no reliable conclusion that can be drawn between selenium exposure and cancer risk?

- A. Odds ratios are an estimate of relative risk and the actual relative risks were not provided.
- B. The RCTs showed inconsistent results compared with the observational study designs; therefore, a causal relationships could not concluded.
- C. The CI showed wide variability and often included a value of one, thereby indicating that the data are weak.
- D. The potential for sex bias in the observational studies created inconclusive results.

# Answer 9



## Answer: B

Answer B is correct because RCTs are a stronger study methodology and are usually considered to be better evidence or higher quality evidence when compared to observational study designs. So when evidence is conflicting between RCTs and observational studies, the conclusions from a well-designed RCT are usually considered superior. An OR is an estimate of relative risk but relative risk is still a measure from an observational cohort study design and is still not considered superior to a well-designed RCT. So Answer A is not the best answer. Answer C is incorrect because this just describes a problem with the observational data which has some truth to it when looking at two of the CI within the results. However, this again is the data taken from the observational studies and not the RCTs. Answer D is incorrect because the observational studies did take into consideration the gender of the patients and controlled for this in the results that were given in the review.

# Question 10



Both the NPCT and SELECT found possible harmful effects of selenium without additional reductions in cancer. The NPCT evaluated 200 mcg/ day in prevention of non-melanoma skin cancers in light-skinned participants; the SELECT evaluated the use of selenium 200 mcg/day with or without vitamin E 400 international units/day in more than 35,000 men older than 55. The SELECT trial cohort included 15% African American males. These two RCTs illustrate a potential problem related to internal validity (methodology). Which one of the following was most important to consider when the Cochrane reviewers were evaluating the data?

- A. Variability in dose of selenium.
- B. Variability in sample size.
- C. Publication bias.
- D. Comparability or homogeneity of samples.

# Answer 10



## Answer: D

Answer D is correct because the two studies are very different in the type of patients and the type of cancers that they are evaluating. Therefore, it is difficult to combine this data to determine overall effect of selenium on cancers. This is a concern when completing reviews such as done by Cochrane as well as when researchers are looking at combining studies from methodologies such as meta-analysis. The Cochrane review on selenium points this vary issue out in its limitations related to the methodology. Answer A is incorrect because in these two studies the dose of selenium was the same even though the SELECT study had a second group that received vitamin E. Answer B is incorrect because the difference in sample size is not a major factor in this type of review. Sample size differences can present challenges with other types of studies. The key is not so much the sample size difference but rather whether the outcome variables were powered. The powering of the outcome variable is critically no matter the sample size. Answer C is incorrect because both of these trials were published and the Cochrane review was unable to detect any publication bias from studies that had been completed but not reported. Both the SELECT and the NPCT have had multiple publications with both study design and substudy results.

# Question 11



A student pharmacist is completing an Advance Practice Rotation and has been assigned the task of seeing if any additional studies have been published on selenium and cancers since the most recent Cochrane Review has been published. Which one of the following is the best resource for the student to use?

- A. PubMed.
- B. UpToDate.
- C. Google.
- D. *www.fda.gov*.

# Answer 11



## Answer: A

Answer A is the best answer because this Cochrane Review was published in May 2011 and stated in the review that the studies were up-to-date through April 5, 2011. The student would know to search the literature from that point on. PubMed offers the best choice to look for the most recent studies since it offers the in process feature as it adds studies and publications to the database(. <http://www.ncbi.nlm.nih.gov/pubmed/>). Answer B is incorrect because UpToDate would not necessarily be updating the system to include recently published studies on all topics in the database in a timely fashion. There is no guarantee that this would be updated for selenium with the latest information. Answer C is incorrect because Google is not set up to search for the latest studies on a topic and it can be difficult to search because it does not provide the same searching strategies and limits strategies that PubMed offers. Also, Google does not offer an in process option. Answer D is incorrect because the FDA web site is not designed to provide the latest publication on a specific topic especially this type of topic.

# Question 12



The health care advisory committee to an employee wellness program is contemplating adding vitamin D serum concentrations to its routine laboratory screening. The cost of adding this particular test is \$12 per employee, which is a significant increase in overall expenditures. The vice president of human resources is asking the advisory committee to provide data or national guidelines that show the cost-benefit of this recommendation. Which one of the following would be the best reference source to start looking for national guidelines or standards?

- A. Google.
- B. WebMD.
- C. *www.controlled-trials.com*.
- D. *www.guideline.gov*.

# Answer 12



## Answer: D

Answer D is correct because [www.guideline.gov](http://www.guideline.gov) provides a comprehensive listing of national and even some local clinical guidelines. This is a difficult subject that does not always lend itself to development of quality guidelines and actually presents a difficult search strategy in answering the questions. However, the best starting place is to see what other guidelines have been published in this area. Answer A is incorrect because Google does not offer a good way to search guidelines in one place. The searching algorithms for Google are not the most efficient means to search this topic. Google may provide some additional information later in the search strategy but is not the best place to start. Answer B is incorrect because WebMD is a consumer web site that is not intended to provide guidelines to health care professionals. Answer C is incorrect because [controlled-trials.com](http://controlled-trials.com) is not a good resource for looking for national guidelines but rather provides a good resource for identifying controlled clinical trials. It could be considered later in the search strategy if one was looking from clinical trials or even economic trials related to the use of vitamin D. Other databases are available that provide better searching strategies for economic studies than [controlled-trials.com](http://controlled-trials.com).

# Question 13



A patient from the anticoagulation clinic has found a Web site that provides a comparison between dabigatran and warfarin for atrial fibrillation. The patient insists on switching to this new therapy because this Web site states that dabigatran is more effective than warfarin and does not require any blood work. When you inquire about the source of the information, the patient tells you that it is called “Dean’s Stroke Musings.” The patient has read several other Internet testimonials on treatment with dabigatran and how it has changed the writer’s life. Which one of the following is the best advise to give this patient on the use of the Internet for patient information?

- A. Discourage them from using blogs and patient testimonials for advice.
- B. Caution them on opinion pieces and redirect them to search the web for other sites.
- C. Redirect them to WebMD to compare treatments for atrial fibrillation.
- D. Redirect them to better sites and provide them with some standard questions to help determine a high quality site.

# Answer 13



## Answer: D

Answer D is correct because it redirects the consumer to look at better sites and also provides them some tools when searching the Internet for health-related information. It provides a platform for the pharmacist to interact with the consumer and help guide them to better health information. This also allows a dialogue with the patient about looking at testimonials and blogs without appearing too critical of their choice of Web sites. Answer A and B are incorrect because they are more critical in nature and do not really provide an opportunity for the pharmacist to educate the patient and provide them with alternatives. Answer C is incorrect because WebMD may have a good discussion of atrial fibrillation but this does not directly answer the consumer's question related to the comparison of the drugs and it does not open a dialogue with the HCP.