

MODULE 1 – LESSON NOTES

YEAR 2 – ONLINE – MARCH 2011

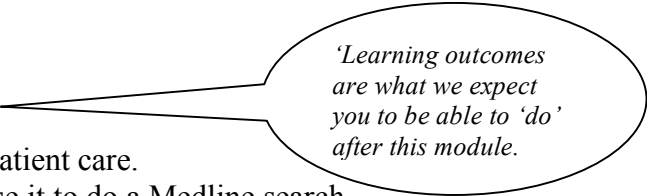
Developing search skills & exploring the difference between information and evidence

TITLE: ‘Giovanni has a weight problem’

This is an introductory module to develop your skills in finding answers to simple medical problems using Medline. It’s also about learning to use Moodle. The activities will help you see the link between a patient’s problem, English language and medical sources of evidence online. Moodle is a communication tool so many of the tasks can be discussed and worked through using online forums. You can contribute to these in English or Italian.

Learning Outcomes

1. Explain the link between ‘evidence-based medicine’ & patient care.
2. Construct a focussed clinical question using PICO and use it to do a Medline search.
2. Demonstrate you can use the online resources on Moodle
3. Demonstrate ability to use Medline (Pubmed) data base and its basic functions
4. Demonstrate ability to identify components of a clinical problem using PICO
5. Give an example of how ‘evidence based medicine’ can help your patient.
6. Read different medical abstracts in English and synthesise results.
7. Understand the meaning of 2‘study designs’ with reference to RCT & Systematic review



‘Learning outcomes are what we expect you to be able to ‘do’ after this module.

Resources for learning

GIMBE web link: What is evidence based medicine (Definitions)
Medline video tutorials (online)
Discussion Forum (online)
Online quiz

Activities in Lesson 1

- *Watch* a short video about a patient’s experience of obesity and post a personal comment on discussion Forum
- *Do* a comprehension quiz. Answer 5 True/False questions about the patient’s story
- *Compare* a Google search with a Medline search to find an answer to a patient’s query
- *Apply* the PICO technique to structure a clinical question and guide a Medline search.
- *Use* Boolean operators effectively in Medline search
- *Read* medical abstracts online and identify best evidence
- *Do* a quiz based on abstracts to identify the best answer to a patient’s query
- *Do* a quiz to check your understanding of key vocabulary in abstracts

1.1 Watch & Listen to Jennifer's story

I think it's always important in medicine to think of medical problems by starting with a patient's perspective. Listening to patient stories about illnesses and conditions is an excellent way to do this. Here's an example. 'Jennifer's' story from YouTube introduces the topic of obesity and gets you thinking about some of the issues. If you find it difficult to understand, don't worry. Look at the quiz questions. They will help you with details. You can listen to the video as often as

Listen to Jennifer is a 46 year-old American woman tell her story of her 'battle with obesity'. Jennifer says that people think "fat people are just out of control" and that it's basically their fault – for example poor diet and life-style. What do you think? She also feels everyone should be "entitled to a service to help improve the quality of their lives". The service she is referring to is 'Gastric bypass surgery'. What reasons make you agree or disagree with Jennifer's opinion?

1.2 Forum. Post a comment

Thinking about Jennifer's story as a future doctor, what reasons make you agree or disagree with Jennifer's opinions, and the choice she made?

1.3 Quiz: 'Jennifer's battle with obesity'. There are five True/False questions.

1.4 Giovanni's case: a problem to solve

Read the case and identify the key question that need answers

Giovanni is a 53-year old Italian truck driver. He's married with 3 children. He's is generally in good health but has a problem with his weight. His family has a tendency to put on weight too and his dad died of a heart attack at 64. The GP has often given him advice on diet and lifestyle but without much compliance on Giovanni's part. Today Giovanni thinks he might have a solution.

At his GP's surgery Giovanni asks for some advice

Doctor, my wife bought me this 'Chitosan' at the chemist .. it's called 'Fat Blazer'



Oh yes?

It's a food supplement. They say it works. The only thing, it's expensive. €20 euros! It lasts about 2 weeks.

That's pricey!

Well, what do you think? Is it going to help?

I don't know about Chitosan.. Let's see!

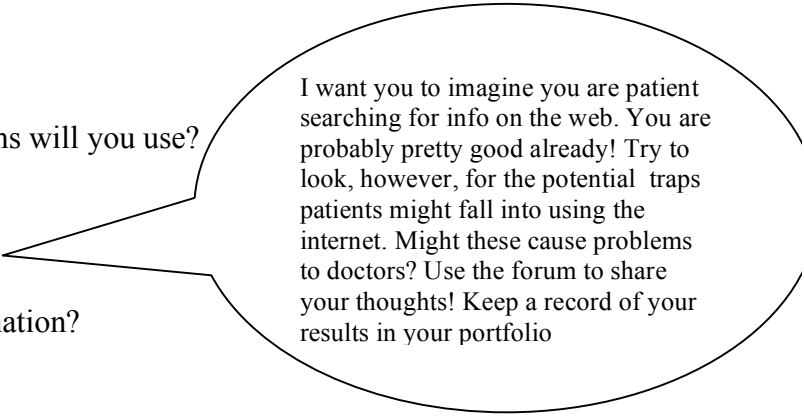
The General practitioner (GP or family doctor) decides to do an internet search for Giovanni to find out about the product.

1.5. Forum:

Where do you search for evidence? What search terms will you use?

Do your own search and see what you find

- a) Google or Yahoo
- b) What kind of information did you find?
- c) How would you rate the quality of the information?
- d) Is it enough to answer Giovanni's question?



How many and what kind of hits did you get? Was it scientific? Commercial? Trustworthy?

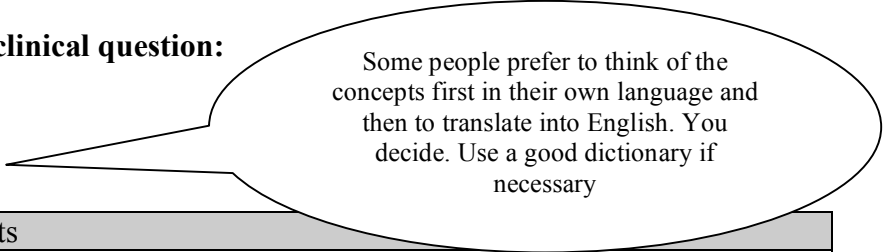
Constructing a search question and doing a 'free text' search using Medline

We can approach Giovanni's problem using a more systematic approach. A good way to begin a search is to identify all the *key words* and *concepts*. That is, to brainstorm the problem. For example, the balloons below divide the question into 4 main areas.



1.6 Try to make the problem simple by deconstructing all the elements. In the table write what you think are the key words in English for your search. Then compare with the table on the next page.

Constructing a search strategy around a clinical question:
Brainstorm some terms in the table.



Elements	Words and concepts
Giovanni's condition:	
Giovanni's wishes	
Giovanni's question	
GPs query and concerns	

Constructing a search strategy around a clinical question:

I did this exercise too. Here are some possible key words. Notice how I have tried to think of more than one word for each concept (e.g. using synonyms). Use a dictionary if you can't think of any. Thinking of all the possibilities at the start gives you flexibility to search using different combinations. This way you are more likely to miss less important evidence!

Elements	Words and concepts
<i>Giovanni's condition:</i>	Obese, obesity, overweight, (adult male)
<i>Giovanni's wishes</i>	Lose weight, decrease weight, reduce weight, weight loss, weight reduction
<i>Giovanni's question</i>	Chitosan, 'Fat Blazer', effectiveness (i.e. <i>Is chitosan effective to reduce weight?</i>)
<i>GPs query and concerns</i>	Safety, efficacy OR effectiveness of chitosan to reduce weight; dietary supplement alternative treatments; comparison with: placebo, diet; exercise

You have already searched for information on Google or Yahoo. Now let's explore the world's primary medical data base: MEDLINE. The link is below.

Exercise: Conduct a MEDLINE search

STUDY BOX - What is MEDLINE?

Medline is a fundamental resource for clinical evidence. PubMed comprises over 20 million citations for biomedical literature from MEDLINE, life science journals, and online books. PubMed citations and abstracts include the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and preclinical sciences.

PubMed is a free resource that is developed and maintained by the National Center for Biotechnology Information (NCBI), at the U.S. National Library of Medicine (NLM), located at the National Institutes of Health (NIH).

You need to become expert in using its various functions. Basically, this means an ability to translate a *clinical question* into a *systematic search strategy*.

1.7.YOUR MEDLINE SEARCH

Try a Medline search. Click on the link below and using the key words identified in the table, go to the **search window** on Pubmed and conduct a search.

Link:

<http://www.ncbi.nlm.nih.gov/sites/entrez?db=pubmed>

I really recommend you do this exercise on your pc. This is not theory, but practice. You need to do it to develop your skill. In the exam you need to demonstrate your proficiency on the computer.

Questions for your forum.

Are your results similar to your Google search? How many results did you find? What words did you use? Share your strategies in the forum. Is it easy to find an answer to your (Giovanni's) clinical question? Why? Why not?

Now let's look at a tool which can help you filter information. This method has evolved to be used on Medline, the largest medical database in the world. Read 'Study box' which introduces the method.

STUDY BOX: *Writing clinical question to search for evidence*

Information must have 3 attributes to make it useful in your daily clinical practice. It must be:

1. Relevant to your need
2. Be correct
3. Be quick to find

The main skill you need, is to be able to convert your information needs into focussed questions. This requires problem definition. We saw this in the table about Giovanni's problem. Let's look at the same problem now using a medical information aid called 'PICO'. PICO is an acronym for :

Patient-Intervention-Comparison-Outcome.

This is a helpful tool to write a good clinical question which you can then use to search MEDLINE:

I find this approach very simple and effective. It's not a panacea for all questions, however. It will be one more strategy in your repertoire. In the final exam – year 5 - you need to demonstrate you can apply it to different patient problems. It's not difficult, but you need practice.

PICO analysis of Giovanni's query

Here is an example of how we can deconstruct the problem into key words for our search.

Components	Descriptors
P <i>patient/pathology/condition</i>	obese; obesity; overweight;
I <i>intervention (drug; procedure, test)</i>	Chitosan; Fat blazer; dietary supplement
C <i>comparator</i>	placebo; diet; exercise
O <i>outcome (result; desired goal)</i>	weight loss; lose weight; decrease weight; reduce BMI;

With the key words from our table we can construct a focussed question:

You can use this question structure in any language. However, to do a search on Medline you must translate the key words into English! (sorry C:)

Clinical Question

In an adult obese male is Chitosan compared to placebo more effective in reducing weight by 5 kilos in 6 weeks?

STUDY BOX: using Boolean operators ‘AND’, ‘OR’, ‘NOT’

<i>Use</i>	<i>TO</i>
AND	Narrows search and retrieves records containing <i>all</i> of the words it separates. AND is used to link different components in PICO e.g <i>P AND I AND C AND O</i>
OR	Broadens search and retrieves records containing <i>any</i> of the words it separates (e.g. obese OR overweight. This is used to link synonyms using PICO
NOT	Narrows search and retrieves records that do <i>not</i> contain the term following it (e.g. make NOT female)
()	Group words or phrases when combining Boolean phrases and to show the order in which relationships should be considered: e.g.,

1.8 Conduct a ‘free text’ search on MEDLINE using PICO

1. Combine your key words in the search window using PICO
2. Use parenthesis () () () to separate Each PICO concept.
3. Use Boolean operators (and/or/not) to join similar concepts and link them
4. Use * if appropriate to truncate the root of a key word to include all its variations (e.g. obese* = obesity or obese)

Follow these 4 steps to do your search. Doing it, not just reading about it, is essential. When you finish, compare your strategy with my example on the next page. Keep a printed copy of your strategy in your portfolio.

Note: Other features of MEDLINE using PubMed

In lesson 2 you will do a series of short video tutorials to learn to use the different key functions ‘PubMed’ For now, jdon’t worry about these. Just use the search window and practice applying PICO.

My example of PICO search: *look carefully at how I combined the terms*

(obes* **OR** overweight) **AND** (chitosan **OR** Fat Blazer) **AND** (placebo) **AND** (weight loss **OR** decrease weight)

Did you structure your search in the same way? Different combinations will give different results which is why it's usually necessary to try multiple combinations in your searches. This way you won't miss potentially vital evidence.

Now let's examine the results of the search and try to find an answer to Giovanni's question.

1.9 Type into MEDLINE my example and read the abstracts that you retrieve from the search. *(Compare your original search results with the 'hits' using my example. They may be very similar!)*

STUDY BOX – Pubmed provides abstracts of full text articles.

PUBMED only gives an 'abstract' or summary of the articles on the MEDLINE database. However, a good abstract can be very useful in helping us decide if the article is relevant to our problem. In fact the first question we should ask is: Is this a summary of an original article that is directly relevant to my personal interest or medical query?

TIP: READ THE 'AIMS' OR 'OBJECTIVES' OF THE STUDY If the answer is 'NO', go on to the next abstract.

Abstracts to clinical papers give a summary of the information in the full text article. A good abstract should give information on the objectives of the study, the study design, the participants, what the researchers did in the study (interventions), the main results of the study and a short conclusion. Studies can be of two general types:

- (1) with patients. These are classified as 'primary studies'.
- (2) Summaries of primary studies. Summaries, or 'reviews' of primary studies are classified as 'secondary' studies.

Abstracts are conventionally written as one paragraph but sometimes abstracts are 'structured' and this makes reading them easier. A structured abstract to a clinical research report is divided into **sections** which are the same as the sections found in the 'full text' version: These sections usually include: *objectives, study design, participants, methods, outcome measures, results, conclusions*

Structure of scientific articles

Applying my example above, you should have 11 results. Click on the 'title' of each result to view the abstract. Identify the structured abstracts and read them to see what information each section contains. Four abstracts are NOT structured. Read them carefully and put a cross in the box if they contain information on any of the sections. When you finish check your answers with my solutions on the next page.

Put a cross (X) in the column if information on the sections is contained in the abstract

Information on	Egras et al (2011)	Gonzalez (2010)	Mhurchu (2004)	Wuolijoki (1999)
<i>Background</i>				
<i>Objectives</i>				
<i>Participants</i>				
<i>Study design</i>				
<i>Search Strategy</i>				
<i>Selection criteria</i>				
<i>Interventions</i>				
<i>Methods</i>				
<i>Outcome measures</i>				
<i>Results</i>				
<i>Conclusion</i>				

As a study suggestion, I think it's a good idea to print the abstracts and use coloured pens to 'highlight' the different sections. This is also a technique to explore new vocabulary too!

Check your analysis with mine!

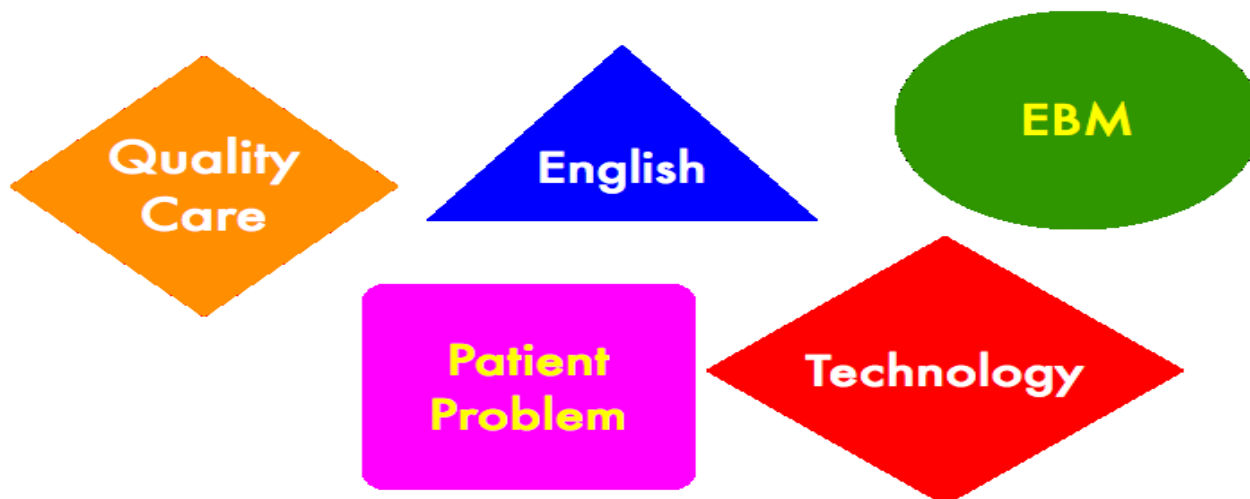
Notice that the studies by Egras and Mhurchu are ‘secondary’ studies. That is, they summarise research using patients done by other authors.

Information on	Egras et al (2011)	Gonzalez (2010)	Mhurchu (2004)	Wuolijoki (1999)
Background		X		
Objectives	X	X	X	
Participants		X		X
Study design	X	X	X	X
Search Strategy	X		X	
Selection criteria			X	
Interventions		X		X
Methods	X	X	X	X
Outcome measures		X		X
Results	X	X	X	X
Conclusion	X	X	X	X

Online quiz. There are 2 quiz exercises. Do the online quiz after reading the abstracts carefully. Print them for ease of reference.

- The first quiz asks you to decide which abstracts provide the best answer to the clinical question.
- The second quiz is on academic vocabulary in the abstracts

1.10 Portfolio. Write a 200 word (max) summary (in Italian or English) of the take home message of this module. You can write your summary online. Use the key words in the shapes below. Try to make the connections between the activities in this module; between EBM, patient care, use of English language and internet technology. What can you say of the difference between evidence and information from a patient’s perspective and from a health professional’s perspective?



What do I do now?

You can start Module 2 at the end of March. It is a skills module to develop your knowledge of the different functions of PubMed and Medline. You will need to watch various short PubMed tutorials online. If you do not have a computer, go to the main library in the “**I Clinica Medica**” and ask for a student password to use the library internet access computers.

You need to finish **module 2** by **15th April**.

I recommend you all get a password for pc access in the hospital. It’s really useful!