

# Module Six - Evaluating Electronic Resources

## Introduction

“Is this story true?”, “I am skeptic about the information provided in that report”, “The results reported in that study are interesting but I need to cross check”. These are common attitudes people have about things they hear, read, see or learn. These attitudes are the results of the process of analyzing the information, evaluating its quality. Conscientiously or unconscientiously people judge what they learn from friends or colleagues, hear on the radio, see on TV, and read in books, newspapers or internet. Their judgment determines the degree of trust they give to that information and how they are going to behave with that information. Information is a crucial component of any decision making process. In the medical field decisions based on wrong information can lead to life threatening and fatal consequences. It is therefore important to evaluate the information needed for the purpose of decision making. The need to evaluate information becomes more important in the context of plethora of online resources. This need arises because the Internet does not have an editorial board that controls and validates its content. This module discusses the criteria and process of evaluation of online information.

## Learning Objectives

In this module we'll:

- discuss the importance of evaluating information,
- presentation criteria for evaluating information,
- describe how to evaluate different sources of information
- Evaluate sample web pages.

## Learning Outcomes

At the end of the module, you should

- understand the importance of evaluating information sources,
- develop the habit of evaluating any information before using it,
- list some evaluation criteria,
- find in a document key elements useful for evaluation,
- Evaluate information resources found on the internet.

	Content	Methods	Mode of Assessment
5.2.1	Definition and importance of evaluating information sources	Brainstorming Discussion	Pre and post Question and Answer
5.2.2	Evaluation processes	AS Above	AS Above
5.2.3	Criteria for evaluating information sources	Brainstorming Discussion	Practical exercises
5.2.4	How to evaluate information on the Internet	Lecture Demonstration	Quiz Practical exercises

## Pre-Evaluation: Assessing the Quality of Document

1) Look at the following three documents:

1. Malaria. Available at <http://www.who.int/mediacentre/factsheets/fs094/en/>
2. The economic burden of Malaria.  
<http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=mal1&part=pg85>
3. Symptoms and Natural Remedy for Malaria. <http://hubpages.com/hub/Symptoms-and-Natural-Remedy-for-Malaria>

2) How would you rank the quality: poor, acceptable, good?

3) Justify your decision.

## Definition and Importance of Evaluating Information Sources

For Merriam-Webster's Collegiate Dictionary (1) "evaluate" means "to determine the significance, worth, or condition of usually by careful appraisal and study". The evaluation of information is the process of critically analyzing a document, or information in order to establish its quality or value and decide the credit to give to it. The analysis is done by applying judgment criteria to establish its reliability, authenticity, credibility of the source, the reliability, the validity of the information. Be it in daily life, in a professional context; in scientific literature, most people are cautious about any new information. In everyday life, we know that not everything being said is true. We were taught that media are not neutral and information being

reported by media might be distorted or biased for different reasons. There are many reasons why we should be cautious about new information and the need for evaluation:

1. The amount of Available documents is huge; it is impossible to read all published Documents. Thus it is important to select the ones that give the most comprehensive understanding about a subject or topic.
2. Researchers and Scientists are Under Pressure: They need to publish scientific documents (journal Articles, book chapters, communication at conferences) in order to be promoted in their career. Thus, not all published documents bring something new or are relevant to information needs in a given situation.
3. Some information is false, erroneous, incomplete or misleading: Scientific literature is usually peer reviewed in order to reduce errors. However, there many cases of erroneous documents being published in top level journals. MEDLINE, the premier bibliographic database in the biomedical field, contains many retractions, errata or corrections to articles published in scientific peer reviewed journals. The likelihood of falsehoods becomes greater in documents that are not peer reviewed such as web sites.
4. Information affects our decisions. We base our decisions on information that is gathered from different sources. It is more important in the health and medical fields because wrong information can lead to decision that will result in dramatic consequences; which may sometimes lead to perpetual disabilities or death). Evaluating information therefore becomes more important and crucial in the context of the Internet for many reasons. For the authors of the “An Educators' Guide to Credibility and Web Evaluation”(2) the lack of guidelines, the lack of monitoring, the mobility of information, the lack of representation and potential bias are some of the justifications of the need to evaluate information found on the web. In addition, the Internet does not have an editorial board which controls and validates its content. It is an uncontrolled landscape that can be looked at like a jungle where anyone can create, edit and delete content about any topic and publish that content easily.

## Evaluation Criteria

There are many guidelines and tools dealing with the evaluation of the information found on the Internet. Some of them are general while others focus on health information. The guidelines and tools provided try to define criteria of quality and raise the questions the reader should try to answer while dealing with any source of information.

HonCode, published by The Health on the Net Foundation (3), is a code of conduct for website producers. It consists of 8 principles which are: authoritative, complementarity, privacy, attribution, justifiability, transparency, financial disclosure and advertising policy. A Website that complies with these guidelines is accredited by HON. Even though the target audience of the HonCode are content producers, it can be used by an Internet user to assess the information he's consuming.

The NetScoring (4) lists the following criteria: credibility, content, links, design, interactivity, quantitative aspects, deontology and accessibility.

The desire handbook (5) lists the following groups of criteria:

- Content criteria which are validity, authority and reputation of the source, accuracy, comprehensiveness, uniqueness, composition and organization, currency and adequacy of maintenance,
- Form criteria which refer to ease of navigation, provision of user support, use of recognized standards, aesthetics,
- Process criteria is related to information integrity, site integrity, system integrity.

Some documents use acronyms to make it easier to remember evaluation related concepts. Karen M.

Christensson(6) uses RAD CAB acronym for relevancy, appropriateness, detail, currency, authority,

bias. Dr Mohamed Taher talks about The “Six A's”(7) : authority, accuracy, approach, age, audience, accessibility.

Even though different tools and guidelines sometimes use different terminology, their content is almost the same. They point out the questions a reader or Internet user should find answer to in order to evaluate the information. These questions may be:

- about the relevance of the information to the reader and his needs,
- about the provenance of the information, for instance who is the author ?, where was the information published ?
- about the information production process : is there any conflict of interest? what's the author's motivation ? Was the document checked and corrected by another person or a third party body?
- about the content : what is the degree of reliability, accuracy, truth, completeness ? What is the age of the document?
- about the form :its layout, organization, presentation, language.

### **Relevance to User's Needs**

Information needs is defined by several factors: who the user is, what he intends to use the information for, what the topic he is interest in, in which settings, etc. The relevance of information to the users is contextual. The same information does not have the same value for different people or for the same person in different settings. Thus the same person won't use the same information for writing articles and for treating a patient. Likewise the same documents may not be suitable for a doctor and a patient.

In the first place, the reader (Internet user) should appreciate how relevant the information is for him. In other words, is the document about the topic one is looking for, is he a member of the target audience? To define the relevance, users need to answer the following questions “Is the information about topic he is interested in? Is this document suitable for him?”

Answering these questions helps the readers select documents and information he will be doing further work on.

### **Authority**

The authority is referred to designate on one hand people responsible for the content, and on the

other hand the sources of information used to produce the current content. The authority helps establish the credibility and, validity of information.

Guidelines state that a credible document gives enough information about the authors to help the reader know his identity, qualifications, credentials and his degree of knowledge of the topic one is writing about. The same recommendations apply to organizations the authors are affiliated with or organization that took part in production process. The purpose of requiring such information is to relate the author/producer to the topic and determine if he has sufficient qualifications and expertise to write in this topic. Is he a specialist, amateur or professional on the topic? The second aspect of authority refers to sources of information used to produce the document being read. Source of information should be clearly cited, identifiable and dated. Any fact being reported or any statement should be supported by a reference to qualified sources of information and evidence.

### **The Document Production Environment and Process**

The context of production can influence the quality of the information. Hence HonCode recommends that content producer should provide information about sponsorship and advertising. Scientific journals ask authors to state any possible conflict of interest. The purpose and the target audience of the document should be also indicated. Scientific literature (journals, books) are generally peer reviewed, but not all websites undergo such a process. While evaluating information source, readers are invited to seek information on how the information was created, corrected and validated. Website producers are also encouraged to inform visitors about the information production and validation procedures. When evaluating an information source it is good to establish the evidence of quality control during the production process.

### **Content Related Criteria Quality**

When it comes to content itself, its quality depends on several factors such as the nature of the document, the intended audience and the purpose as well as the topic. An editorial, a clinical trial and patient education pamphlet won't have the same content even if they deal with the same topic. No matter what the differences are, they should provide information that helps the objectives of the work.

It is admitted that good quality information sources are accurate, factual, comprehensive and objective.

Accurate documents and reports carry objective, correct, factual and comprehensive information. Being objective means that the author does his best to avoid bias or informs the reader about possible biases when he cannot avoid them. Correct information gives the whole truth and avoids hiding known facts about the topic. Comprehensiveness ensures different points of views are taken into account and important facts are not ignored.

Good quality documents should be written in such a way that the reader can differentiate between facts and the author's point of view. It should be presented in a consistent and logical way that makes it easy to read and understand.

### **Presentation Related Criteria**

Presentation related criteria deals with both the physical and intellectual presentation of the information. The physical presentation refers to the quality of the design, the choice of colors, the graphics and pictures and the layout. Intellectual presentation refers to content organization and the language used. From the physical presentation point of view, it is expected that quality

documents use recognized standards, make an appropriate use of technology, are easy to navigate, and pleasant to view or read. The content should be well structured and organized and written in a language that is appropriate for the audience and the topic.

## **Evaluation Process**

Evaluation is not an independent process. It occurs at the same time with other activities. Evaluation is done while searching, reading and after reading. Evaluating information means:

- asking questions, looking for answers,
- using criteria while giving answers,
- rating the information,
- deciding about the information.

### **Before Reading**

Use selective sources of information and search tools to retrieve information that was evaluated and selected by third party bodies. Libraries, web portals, web directories, information gateways, accredited web sites are good places to start searching for information. Libraries have a long tradition of evaluating, rating and selecting documents for the development of their collection. Web portals, information gateways, web directories also adopt almost the same principles of selection as libraries. Use Meta information, e.g. information that describes, condenses or discusses other documents. Meta information can be divided into three categories: descriptive, summary and evaluative information.

The descriptive information, usually in the form of bibliographic record (citation), contains key elements that help identify the document. It provides the reader with such information as: the author, the type of document, the title of the document, and the age of the information. The summary information is usually in forms of abstracts and table of contents. It allows the user to quickly learn what the document is about without reading the entire content. Evaluative information is in forms of reviews, ratings, recommendations and gives judgment, critical points of view and ratings of the information. Records in library catalogs, bibliographic databases, information gateways are good places where to find that information about documents. These records usually provide: the authors, title, publication date, publishing organization. Library records can list the topics of the document, bibliographic databases sometimes include abstracts. Search engines provide portions of text extracted from the document.

### **While Reading**

When working with a document, try to identify the Meta information. For a book, look at the cover page, back of the book, the table of contents, and the introductory materials. For a journal article look at the first page, identify section titles, look at the last page. For a web page look at the URL, the top and bottom for the page follow links “about us”, “contact”. These parts usually give information about the author, the organization responsible for the document production or publication, the dates of publication or revision and an overview of the content. Sometimes the information about the target audience, the purpose and sponsorship are provided in the above mentioned sections of documents.

While reading the documents, pay attention to the facts and data and how they are being reported, analyzed and interpreted. Identify authors' statements, judgments, position, points of view and determine how objective and balanced they are. It is also useful to pay attention to the language being used: clarity, simplicity, correctness and balanced tone as these are signs of a good quality document. Look for mistakes, errors and misspellings. Good quality documents tend to have less of them.

### **After Reading**

Try to do a summary about the document. In your summary, point out the strength and weakness of the document; raise questions that require further investigation. Rate the document by giving it an overall appreciation.

Do further investigations by comparing the document to other documents on the same topic, comparing your opinion about the document with other people's opinion, finding answers to questions generated by reading the document

# Demonstration of the Web Content Evaluation Techniques

For the purpose of illustrating how to evaluate web resources, information about “cholesterol” was searched using a search engine. The following web pages were picked from results and rated by looking at different parts of the documents and using different evaluation criteria.

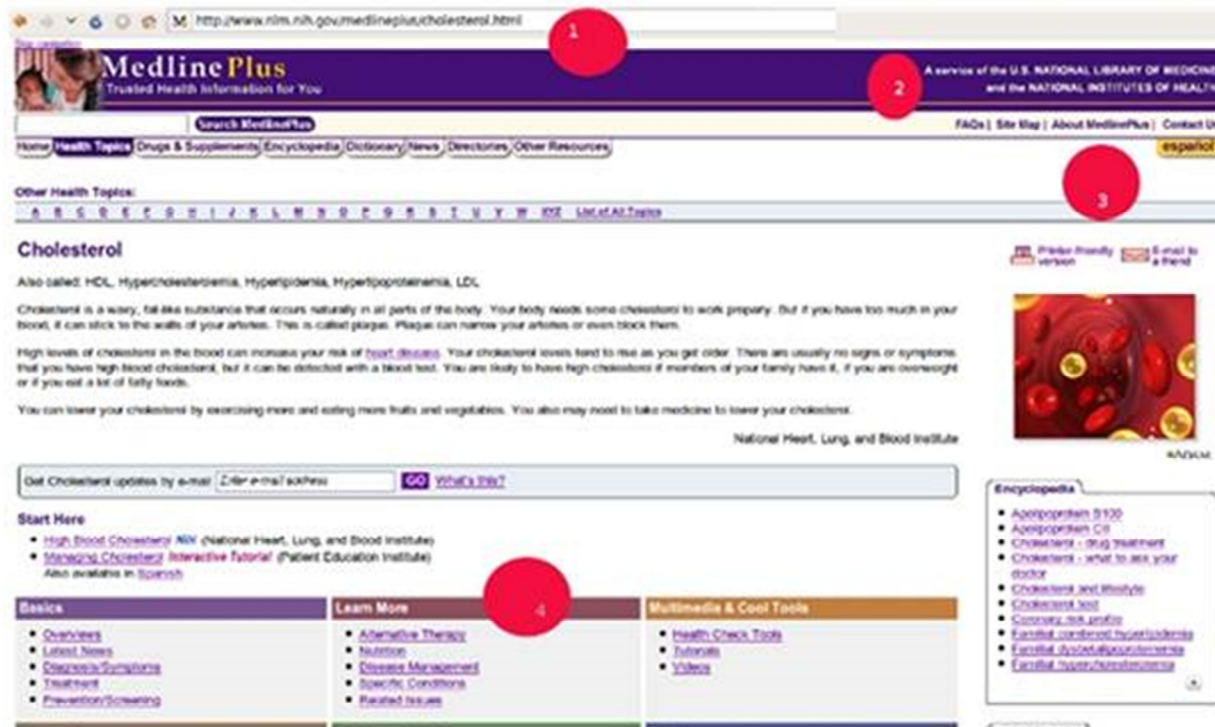


Illustration 6: Cholesterol. Available from <http://www.nlm.nih.gov/medlineplus/cholesterol.html>. Last visited : june 25, 2010

To quickly evaluate this resource the following elements will be taken into account : 1)the URL, 2) the banner at the top of the page, 3) the “about ...” link, 4) the table of content, our own previous experience with the website.

1. The URL “.gov” extension indicates that the web site belongs to a US governmental organization.

Indeed URL might provide information about the type of organization operating the web site: “.gov” is used by US administrations, “.edu” is used by academic institutions, “.ac.uk” is characteristic of UK based academic institutions, “.org” is often used by professional organizations, associations and non for profit organizations, “.com” generally denotes commercial orientation of the site or its owner. Content from web sites operated by governmental organizations, academic institutions and professional organizations is usually curated and trustworthy. In addition the domain name can help identify the owner. In this



example the domain name nlm.nih.gov is probably owned by the National Library of Medicine (NLM) which is part of the National Institutes of Health (NIH).

1. The banner on the the top of the page gives a brief descriptive of the content and indicates the organization responsible for it. It states that Medline Plus is a service run by the "US National Library of Medicine" and provides "trusted health information".
2. "About Medline Plus" is a link to a another page that provides detailed information about Medline Plus website: what it is, who are the contributors, how the content is selected for inclusion, etc.
3. The list of sections on this page shows how well content is structured.

In addition by noting the authority, content production procedures, intellectual presentation, one may also pay attention to the simplicity and clarity of the language used to deliver the content, the professional and pleasant design of the web site. From our previous experience with Medline Plus we learned that it is directory of good quality carefully selected web resources providing consumer health information. In conclusion, this web page about "cholesterol" web page provides content that is very likely to be of good quality.



Illustration 7: Lowering your cholesterol. Available from <http://www.medicinenet.com/cholesterol/article.htm>. Last visited: June 21, 2010

To rate this page, attention will be paid to the following elements: 1) the URL, 2) the advertisement, 3) the design, 4) the authors, 5) the content structuration.

1. The URL “.com” indicates commercial orientation: the content is either commercialized or the website is operated by a commercial company.
2. At the top of the page is advertisement. However, the advertisement is clearly labeled as such. The presence of advertisement confirms the commercial orientation of the site. The commercial connotation and the presence of advertising may create conflicts of interest when advertising is a source of revenue. One should check the advertising policy for this website and the existence of conflict of interest that may influence the quality of the content.
3. The site is well-designed, colors are carefully chosen, blank spaces around blocks and content make the page easy to read. The facility to increase the font size denotes that the site owners made an effort to make the site accessible to people with vision problems.
4. The authors and their qualifications are indicated. Links are provided to pages that give more information about the authors. There is more than more than one person involved in the production of this document.
5. The content is web structured and references to additional sources of information about the topic are provided

At the bottom of the page (not visible here) there are additional elements relevant to the purpose of evaluation : link to “about us” page, the HonCode logo. In the “About us”, it is said that Medicinenet website is owned and operated by WebMD which is known for delivering respectable health information for the general public. The HonCode logo is evidence of the site compliance the Health on the Net Foundation code of conduct for medical and health web sites. Even though the site has a commercial connotation and displays advertising, authors' qualifications, the professional design, the good content structuration, the accreditation by a third body encourage users to consider the content provided on this page as being of good quality.

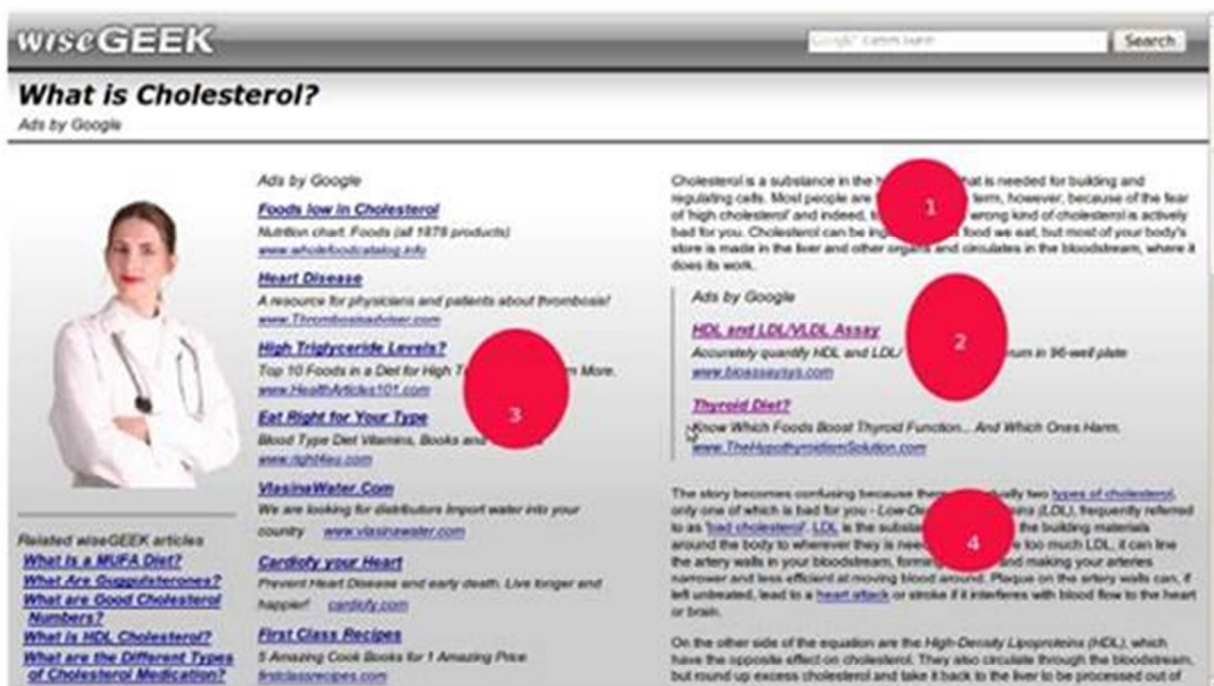


Illustration 8: Cholesterol myths. Available from <http://www.ravnskov.nu/cholesterolhtm>. Last visited: June 25, 2010

Cholesterol myths aims to provide an alternative point of view to the widespread idea about the negative effects of cholesterol on health. The author seems to be Dr. Ravnskov who has published several scientific articles and books about the topic. For evaluation purposes the following elements can be considered 1) the author, 2) the content plus the URL and the design.

1. Dr. Uffe Ravnskov, the author of the content, is a doctor who had clinical and research activities and has published number of books and journal articles.
2. The content of this page however seems to be a promotional material for Dr Ravnskov books and an invitation to buy them. It can be look at as disguised advertising.

The domain ravnskov.nu is derivated from the author's name. A fact that suggests that this site is the author's personal website or a website dedicated to him. The design is not very well-crafted; the color scheme is not uniform across pages. There are few indications that other people participated in the production of the content.



In conclusion, the web page is likely from a personal website whose purpose is to advertise a book written by site owner. A personal web page emphasizing on one point of view, presented in a poor design plus an unclear production process are not signs of content one should trust.

Illustration 9: What is cholesterol? Available at <http://www.wisegeek.com/what-is-cholesterol.htm> . Last visited: June 25, 2010.

“What is cholesterol” is a web page from WiseGeek, a general purpose website which focuses on giving answers to commonly asked questions. At the date of last visit, answers to thousands questions were available in form of articles.

Even though this particular page tries to provide different points of view about cholesterol, the highlighted content elements (circles 1 and 4) and advertising (circles 2 and 3) are mixed. An non experienced user may not be able to differentiate the actual content from advertisement.

The name of the author of the page is provided at the bottom of the page but there is no further information about him and his qualifications. The website provides information about its goal, staff and editorial procedures, but Wise Geek covers a wide range of topics and there is no clear indication that the author of this page has expertise in health or related fields of knowledge. In conclusion, this is a document written by an author with uncertain credentials about a health topic and published in a general purpose website. It is not trustworthy.

## Conclusion

In conclusion “We must be careful and check our sources, and compare them with other sources, before believing the data the author is presenting or selling.”(2).

The Internet has become a major source of information. However one needs to be cautious while searching and using online information sources, because:

- “Anyone can put something on the Internet - an amateur or an expert
- From anywhere in the World - be it the United Kingdom or Uruguay
- They can say anything they like - be it true or false
- And leave it there as long as they like - even if it goes out of date
- Or change it without warning - perhaps even remove it completely”(8).

Good quality information sources are accurate, updated, factual, comprehensive, cites good sources that are objective, balanced, correctly written, well-presented, are transparent about authorship, sponsorship and purpose. Poor quality information sources are unreliable, invalid, inaccurate, out-of-date, lacking in authority or credibility and usually don't cite references. . The presence of unfounded statements, unbalanced judgment, mistakes and misspellings, inappropriate presentation are also considered as signs of poor quality.

## Post-Course Evaluation

Each learner will tell the group his opinion about the document he assessed and report his judgment criteria. While one participant is reporting aloud another learner will write key points into the following table

Why is it good?	Why is it bad?	What characteristics did you consider?

## List of references

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2011

# Finding, Organizing and Using Health Information: A Training Manual For Students, Researchers and Health Workers In Africa

Ajuwon, Grace Ada

Network of African Medical Librarians

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Ajuwon, G.A. et al (2011), Finding, Organizing and Using Health Information: A Training Manual For Students, Researchers and Health Workers In Africa. Network of African Medical Librarians  
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