

THE HYPertext GUIDE TO FINDING RELIABLE MEDICAL INFORMATION

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Doctors are your first source of information about any medical problems. But unless your problem is a very simple one, they do not have enough time to tell you everything you need to know. It's up to you to learn as much as you can about your problem and its treatments so you can make good choices, reduce risks, and not do or eat anything that might conflict with your treatment.

The more you learn, the better your chances.

PATIENTS

Local and on-line support groups can provide information and emotional support.

SUPPORT GROUPS

In the United States and some other countries, support groups exist to help people deal with health problems. Most members have been attending meetings for a while. Some are there to learn more about their choices. Some are about to be treated. And some have continued to attend after treatment—even if it happened years ago. Most will be happy to answer your questions or help you maintain a positive outlook. But perhaps the most valuable thing about support groups is that they all understand what you are going through.

Many support group meetings begin with a lecture by a specialist or researcher. (If a hospital sponsors the group, they usually provide most of the speakers.) Afterward, the members may join informal breakout groups to answer each others' questions. A medical professional should be present to make sure answers are accurate.

You may feel confused or embarrassed the first time you attend a meeting. People may ask questions that seem very intimate. But you will feel more comfortable once you've listened to others talk about their problems and solutions.

Members who feel the need to reassure themselves that they made the right choices, may strongly recommend that you do what they did. Listen, but think for yourself.

If a group seems disorganized or badly run, try another. Support groups are worth the effort. And continue to attend after you have been treated. That way you can get help with post-treatment problems and you can offer support to new members.

about support groups http://en.wikipedia.org/wiki/Support_group

National Cancer Institute support services <http://goo.gl/pR1gs>

ON-LINE COMMUNITIES

There are e-patient communities for many diseases and conditions. They typically have many more members than local support groups do, and someone will probably be on-line at any time. Members research the problem and share answers with others. Some groups sponsor such things as clinical trials and tissue banks. And some communities are the only outside resources for people with rare diseases.

Dr. Dan Hoch, a neurologist at Massachusetts General Hospital, learned about e-patients in 1994. He observed that:

These "patient stories" often included a number of empowering elements that set them apart from the advice patients typically receive from their clinicians: role modeling by an active, critical, well-informed "expert patient," comparative reviews and recommendations of clinicians and treatment facilities, and advice about how to handle the practical details of living with a chronic illness (such as how to organize a home medical record, manage treatment side effects, find the

best drug prices, and deal with less-than-perfect health professionals and health-care provider systems, and a wide variety of other topics relating to effective medical self-management). These extended patient narratives—no two alike—thus gave rise to an accumulated body of what my colleagues and I began to think of as an expert patient knowledge base. [1]

Dr. Hoch and his colleague Dr. John Lester concluded these groups could be “invaluable resources for clinicians and researchers.” With others at the hospital, they helped hundreds of related groups unite to form the Brain Talk Communities.

Be careful. Many sites claiming to be on-line communities or support groups only provide an unsupervised space for people to ask and answer questions—usually incompletely and/or inaccurately.

ACOR cancer communities www2.acor.org/listservs/

PatientsLikeMe www.patientslikeme.com

e-patients.net <http://e-patients.net>

e-patient’s white paper http://e-patients.net/e-Patients_White_Paper.pdf

Care Pages <https://www.carepages.com>

rare diseases <http://www.orpha.net/consor/cgi-bin/index.php>

Journal of Participatory Medicine <http://www.jopm.org>

ON-LINE PATIENT DIARIES

These diaries record personal stories of treatment and what came after. But helpful diaries are hard to find, and the ones on hospital websites often seem to be advertising in disguise. Search the web for *patient diaries* or *patient stories* and the disease or condition. Some are texts, some are videos.

TELEPHONE CONTACTS

Some support groups can arrange for you to speak with patients who had similar problems. Some organizations or government agencies, like the National Cancer Institute, provide phone, chat, or email contact with people who can explain medical information, show you how to get assistance, and help you cope.

THE INTERNET

There are millions of health-information websites. Almost all are of questionable value at best, and many are just trying to sell you something. Be particularly careful with “social bookmarking” sites. Although they claim to only provide links to sites, many contain copies of the document—which may include malware to infect your computer.

Another drawback to social bookmarking sites is that anyone can post anything. Many links contain misleading or dangerous information, and many others have nothing at all to do with the subject. Looking through 500 such entries is a huge waste of time.

OVERVIEWS

Start with a good overview. Like a roadmap, it can give you an idea of where you are, where you have to go—and what you have to learn. You can read it in 30 or 40 minutes and re-read it as often as you need to. Once you have a general idea of what the disease or condition is and the options you have for dealing with it, you’ll have a much easier time understanding the detailed information in books.

Very few governments provide medical information. The U.S. National Institutes of Health (NIH) and some related sites offer a lot, but their patient materials are not always well-organized and may not tell you much about what patients experience. And even though the pages are reviewed fairly often, you may still find errors, omissions, or information that is out of date.

MedlinePlus has many brief overviews, but their *Interactive Health Tutorials* have much more information. Click on *Text Summary* for a PDF. If you would rather listen to it, click on *Self Playing*.

Many hospital overviews are heavy on photos of happy families and light on details about treatments. Some seem to have been written by the PR department and never checked by doctors. Many parcel out information over a dozen or more web pages, making it hard to print.

Wikipedia has detailed health pages that appear to be very reliable, but they often seem to be written by and for medical professionals, not the rest of us. Nevertheless, the pages that describe such things as tests and treatments may be helpful to you.

Some nonprofit organizations have useful information, others seem to exist largely to ask for donations. Some national (and some local) support groups are good sources.

Patients also create sites, but many are simply random collections of news releases. A few create carefully researched pages that are usually very patient-oriented.

A Health on the Net Foundation (HON) logo indicates that a site complies with HON standards, but only if it was reviewed by HON. Look for “This site complies with the HON code standard for trustworthy health information: verify here.” (Not all valid medical sites request certification.)

Evaluating health websites <http://nml.gov/outreach/consumer/evalsite.html>

National Institutes of Health <http://health.nih.gov>

Wikipedia http://en.wikipedia.org/wiki/Main_Page

American Cancer Society <http://www.cancer.org/cancer/index>

MedlinePlus Interactive Tutorials <http://www.nlm.nih.gov/medlineplus/tutorial.html>

Mayo Clinic Health, diseases and conditions <http://goo.gl/61TwA>

Health on the Net Foundation <http://goo.gl/NrGQ3E>

ON-LINE VIDEOS

Video has the potential to be very helpful to patients who want to understand medical treatments, but that potential is rarely realized. Few offer useful visual information.

Many studies by physicians who rated online medical videos found the same problems as this study of videos about prostate cancer:

The information content was fair or poor for 73% of all videos.... YouTube is an inadequate source of prostate cancer information for patients. [2]

Some videos can be harmful. A physician review of anorexia-related videos found that of the 40 most-viewed videos, almost 30% *promoted* anorexia. An analysis of 153 vaccination videos found 32% portrayed it negatively and 20% were “ambiguous.” [3]

Even videos made for medical students are often not very good. A study by surgeons found “the quality of video clips is generally low.” [4]

Videos are more likely to be useful if they:

- have live-action sequences of real procedures
- include animations that give you a sense of what is done
- clearly explain what you see on the screen
- are between five and fifteen minutes long
- do not resemble television commercials
- show imagination [5]

A search for *cancer* on three major video sites produced more than five million hits. But many had nothing to do with cancer, and too many were about questionable cures.

Medscape Expert Commentary <http://goo.gl/fPMLh>
 medical videos <http://www.medicalvideos.us/videos/>
www.veoh.com • www.vimeo.com • www.youtube.com

MEDICAL NEWS

This is almost always about things that may—or may not—lead to an advance someday, not anything that affects you right now. They are primarily intended to publicize the company, lab, or university that hopes their discovery will become valuable. The most-useful news is about clinical trials, medical-safety alerts, product withdrawals or recalls, and medical fraud and fake news.

Kaiser Health News.org <http://www.kaiserhealthnews.org>
 about clinical trials <http://www.cancer.gov/clinicaltrials/learningabout>
 find clinical trial study results <http://goo.gl/qq1Sc>
 FDA alerts <http://www.fda.gov/safety/recalls/default.htm>
 drugs and supplement information <http://clinicaltrials.gov>
 Quackwatch (fraud alerts) <http://www.quackwatch.com>
 Snopes.com (warns about fake news) <http://www.snopes.com/medical/medical.asp>

Newsletters

Paper newsletters still exist, but most are sent by email or are downloadable from web-sites. Many resemble medical news sites, but some offer useful articles by specialists. National support groups are a good place to look for the better type.

Medical blogs

These have short articles and commentaries by doctors, nurses, and patients. The most useful articles explain such things as how to deal with insurance companies, get treatment, or avoid hospital-acquired infections.

The Well <http://goo.gl/ZLb3VQ>
 Kevin M.D., medical blog <http://www.kevinmd.com/blog/>

Medical wikis

There have been attempts to create medical wikis, but with little success. Most are about specific illnesses or medical specialties. Some are aimed at doctors, some at the general public, some at both. But few seem to be useful to patients.

These official sites are far more reliable:

Centers for Disease Control and Prevention <http://www.cdc.gov>
 World Health Organization <http://www.who.int/en/>
 about medical wikis http://en.wikipedia.org/wiki/Medical_wiki

News feeds & email alerts

RSS feeds send summaries of news or updates from sites you select. (But not every site offers RSS.) The texts can be read with the RSS reader that is built into most browsers. If yours doesn't have one, download a free one from the web.

RSS readers <http://blogspace.com/rss/readers>

Set up email alerts to notify you about topics of interest.

Google alerts <http://www.google.com/alerts>
 Yahoo! Alerts <http://help.yahoo.com/l/us/yahoo/alerts/>
 PubMed journals alerts <http://www.nlm.nih.gov/bsd/viewlet/myncbi/jourup.html>

PUBLICATIONS

The fact that information is printed on paper does not mean that it is reliable. But the printing and distribution of books is much more expensive than Internet publishing, so the information is more likely to have been carefully prepared.

BOOKS

Books for the general public are usually only reviewed on the web. Sites may link the reviews to online booksellers for a percentage of the sales. This is a legitimate way to raise money, but look for more reviews.

Reviews on Amazon.com may be more reliable because most are by patients or their family members. Local or online support-group members can also recommend books.

Downloadable PDF versions of books offered by social-bookmarking websites may have been pirated. And the prices may be inflated. For example, one site sells a cancer book for 50% more than the Kindle edition.

Before you go to a bookstore, try your local library or a medical library. Look at the books and take some home. Read more than one. Buy copies of any that seem useful.

Google Books and Amazon let you look at some of the pages on-line.

medical libraries by state <http://nml.gov/members/>

PubMed Bookshelf <http://www.ncbi.nlm.nih.gov/books/>

Selecting books

These questions may help you evaluate books:

Is it well-organized?

Does the table of contents have a logical flow? Does the author start with subjects you want to know about, or with such things as how you could have avoided the disease or condition you already have? Are chapters and sections clearly titled?

Are the illustrations useful?

Do they help you understand procedures? Do they serve a purpose or are they things of no practical use to you, such as a slide of cancer cells?

Does the index seem large enough?

Compare indexes of several books. Are they about the same length? A brief one might mean the publisher did not consider the book to be worth much time and expense.

Is it easy to read?

Look at different parts of the book. Are the sentences and paragraphs long or short? Are the technical terms clearly explained?

Is the author a doctor?

A good reputation and experience help, but they don't mean a book is well written or contains everything you want to know. When doctors collaborate with professional writers, the books may be easier to understand and more patient-oriented.

Was each section written by a different author?

If different kinds of specialists contribute, a book might be more accurate (for example, the Mayo Clinic books). But if they are from different institutions and not carefully edited, they might contradict each other and important information might be left out.

Is it about evidence-based medicine?

Avoid alternative therapies and focus on treatments that have been scientifically tested.

Are the book and the chapters balanced?

If a doctor wrote it, is there enough information about all the possible cures or treatments? Or is the doctor's own specialty presented as superior to the others?

Was the author a patient?

Patients rarely write books if everything went well, so they may help you understand the pros and cons of different treatments.

How old is it?

A lot can happen in just a few years. And the publication date does not reflect the state of the art at that moment because books take a long time to write and publish.

The disease or condition and forms of treatment are not the only things you should learn about. It pays to know about misdiagnoses, medical errors, hospital-caused

complications, and other problems that are not directly connected to your treatment.

Dr. Atul Gawande:

Links to Dr. Gawande's articles <http://atulgawande.com/articles/Better> (hospital-acquired infections) <http://goo.gl/EiOYB>
The Checklist (surgical errors) <http://goo.gl/gTf8tR>

Dr. Jerome Groopman:

Links to Dr. Groopman's articles <http://goo.gl/5fPlzv>
How Doctors Think (diagnoses) <http://goo.gl/2g12O9>

Dr. Groopman and Dr. Pamela Hartzband:

Your Medical Mind: How to Decide What Is Right for You <http://goo.gl/52FhDa>

NEWSPAPERS AND TV

Few newspapers, magazines, online publications, or TV news shows are willing to pay for the long investigations that are needed to get the facts. The best articles about health and medicine have traditionally come from major newspapers like *The New York Times* and *The Washington Post*, or magazines like *The Atlantic* and *The New Yorker*.

The news business is usually as much about filling a certain amount of time or space as it is about informing the public. Newspapers and TV news get most of their medical news from press releases, and they don't seem to look at them very closely. (For example, those stories about tomatoes curing or preventing prostate cancer that are reported on the ten o'clock news roughly every six months.)

Worse, it often becomes degraded along the way. For example, a study presented at a medical symposium in 2008 was new only in the sense that it was recent. Its results were essentially the same as earlier studies. [6]

The abstract was titled *Disease trajectory of untreated localized prostate cancer in elderly men: a population-based study*.

The press release headline read *Most Older Men with Early-Stage Prostate Cancer Can Avoid Treatment*.

The Associated Press called it *Delaying Prostate Care OK for Some*.

And the *Denver Post* changed that to the confusing and misleading *Study: Passive prostate route just as potent*—and ran it on the front page as if it were really news.

MEDICAL STUDIES

Most medical research studies will not be useful to you.

Reason one What you are looking for may not exist.

- Many studies are only intended to provide answers to parts of much larger problems.
- Some require very long randomized controlled trials that would be obsolete before they were completed.
- Some subjects, even very important ones, have never been seriously studied.

Reason two Definitive answers are very rare.

For every study that suggests or claims one thing, you may find just as many that suggest the opposite—or something entirely different. [7]

Reason three The research may have been rushed or underfunded.

It takes time and money to design and conduct a good study, but grants aren't easy to get. And hospitals, companies, and universities may pressure researchers to publish often and in prestigious journals. [8]

Reason four Most research is flawed. [9]

Some things researchers may fail to do:

- collect information for a long enough period
- study a large enough sample (for example, 40 patients instead of 4,000)
- study a broad enough sample (for example, limiting the study to the hospital they are affiliated with)
- report things that went wrong during the study (*adverse events*)
- be careful about record keeping, materials, calculations, or other things
- conduct a randomized double-blind study [10]

Reason five The data may have been manipulated or faked.

Some studies are:

- created by ghostwriters, signed by researchers who did little or nothing [11]
- tweaked or faked by researchers who want the prestige (and the funding) that comes with a major discovery—or might have an economic interest in a product or company (a conflict of interest). [12]

Flawed and fabricated studies are bad for patients and for other researchers, who might base parts of their own work on those studies.

Reason six Some results are never published.

If researchers (or their sponsors) do not like what they find, the results might not be published. And those buried studies can harm patients if they hide dangerous side effects or ineffective products or treatments. [13]

Reason seven Some results cannot be reproduced.

If other researchers cannot achieve the same results in the same way, the study is probably not valid. But few researchers have the time, money, or motivation to try to reproduce (*replicate*) someone else's study. And finding errors or dishonesty in other researcher's work might cause professional problems. [14]

Reason eight Any journal can be fooled.

A former editor of the *British Medical Journal* has written that they tested reviewers by inserting errors into studies. "Nobody ever spotted all of the errors. Some reviewers did not spot any, and most reviewers spotted only about a quarter." [15]

Reason nine There are too many studies and too many journals.

PubMed, search engine of the National Library of Medicine, indexes studies in more than 5,000 journals and related periodicals. By 2015 there were more than 24,000,000 studies in its database, and the number was growing by more than one every minute.

Free (*open-access*) journals published on-line add to the mountain of studies. And even though some are respected peer-reviewed periodicals supported by grants, too many only exist to collect fees for publishing anything that turns up in their email. [16]

FINDING STUDIES

PubMed searches are done with keywords, author names, dates, and other terms. But they typically list everything that might possibly be related to what you are searching for. For example, a search for the keyword *cholesterol* produced over 200,000 results, including *Spatial memory impairments in a prediabetic rat model*.

Sometimes, regular search engines produce more-useful results.

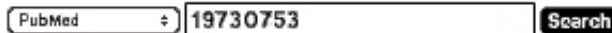
Limiting searches

If you know exactly what you are looking for, you can limit the results by adding tags:

diastema [tw] & Neuman AE [au] & Taz Dent J [ta] & 1950 / 06 [dp]

- [t w] Word or words in the text
- [a u] Author's last name followed by initial (or initials, no space between them)
- [t a] Title of the journal
- [d p] Publication date. Examples: 2003 / 02 / 21 or 2003 / 02

Every study has a PubMed identification (PMID) number. If you know it, enter it in the PubMed search box.



- PubMed search engine <http://www.ncbi.nlm.nih.gov/pubmed?db=pubmed>
- How to use PubMed <http://www.ncbi.nlm.nih.gov/books/NBK3827/>
- PubMed Internet help <http://goo.gl/sUhlTf>

Most of the entries in PubMed are linked to free abstracts (summaries) of studies. Full texts are usually expensive or require a subscription. In many cases, the abstract will be enough. If there is a free text, the entry will note that. You can also look at:

- PubMed Central, free texts <http://www.ncbi.nlm.nih.gov/pmc/>
- freemedicaljournals.com <http://www.freemedicaljournals.com>

Systematic reviews

How can you find reliable studies if PubMed offers too many, you dont know which can be trusted, and so many contradict each other? The best way may be to search for *systematic reviews*, which use carefully defined rules to find the best among many existing studies in order to reach conclusions about the subject.

To find systematic reviews:

Click on the third item in the left-hand column of the results page, *Systematic Reviews*. The words will turn dark blue and a checkmark will appear on the left. The number of systematic reviews is in parentheses.

You can reduce the number of studies by clicking on other items in this column, such as *Free full text* or *5 years* (only studies done in the past five years).

Systematic reviews are not always done as carefully as they should be, so take a close look at the parts of the abstract that describe their search methods, selection criteria, and data collection and analysis.

The most reliable systematic reviews develop detailed plans (*protocols*) based on guidelines created by the Cochrane Public Health Group.

An example: a 2011 Cochrane systematic review of randomized controlled trials of the role that lycopene might play in preventing prostate cancer. Researchers examined 64 published studies and found only three that met their criteria. They eliminated two of those because of a “high risk of bias,” and concluded there was not enough evidence “to either support, or refute, the use of lycopene for the prevention of prostate cancer.” [17]

- Cochrane systematic reviews <http://www.cochrane.org/cochrane-reviews>
- Cochrane review database <http://goo.gl/KPNm>

...

Article types

- Clinical Trial (1)
- ✓ **Systematic Reviews (100)**
- Customize ...

Text availability

- Abstract (95)
- Free full text (21)
- Full text (97)

PubMed Commons

- Reader comments (0)
- Trending articles (0)

Publication dates

- 5 years (56)
- 10 years (80)
- Custom range...

Although medicine has made great advances, there is still little reliable or useful information intended for patients. The best sources are books by doctors and contact with e-patient groups that are actively learning about a disease or condition. Whatever the source, always use caution and common sense. Question everything.

FOOTNOTES

1. *Learning from e-patients at Massachusetts General Hospital* <http://goo.gl/j3mpd>
2. Prostate cancer video studies PMID 19815255
3. Video studies: anorexia PMID 23406655 • vaccinations PMID 22484293
4. Study of surgery videos PMID 22310998
5. The list of suggestions is based on viewings of some of the many videos about the da Vinci robotic laparoscopic surgery system. Too many of the videos showed things like these:

- doctors talking to the camera about things you could read in half the time
- husbands, wives, and doctors repeatedly saying how happy they are with the results—but with little or no explanation of the procedures
- unedited webcasts or videos of actual procedures with little or no explanation
- doctors describing the procedure in front of machines wrapped in plastic

Only a few were helpful:

- a brief but very clear introduction showing the procedure and how and where the instruments are inserted (Christian Hospital, St. Louis, <http://goo.gl/N5J7f>)
- a very clear view of the system accompanied by explanations of each part and each step of the procedure (The da Vinci company, <http://goo.gl/kPtLW>)
- a clever demonstration of the system's precision in which the tiny instruments are used to peel the skin off a grape (The da Vinci company, <http://goo.gl/l7g7P>)

It is not surprising that the company that makes the system did such good work.

It *is* surprising that some prestigious hospitals and universities produce useless videos.

6. American Society of Clinical Oncology press release, 13 Feb 2008 (There is no PMID link because the study was not published in this form.) <http://goo.gl/dKZJc>

The study's conclusion was:

Active surveillance may be a reasonable option for elderly patients with localized prostate cancer, especially among those without high-grade cancer.

Some of the other studies that reached similar conclusions:

4 years earlier Deferred therapy may be a feasible alternative to curative treatment in select patients with favorable, localized prostate cancer. PMID 15017211

11 years earlier Patients with localized prostate cancer have a favorable outlook following watchful waiting. PMID 9020270

16 years earlier Because of the favorable results..., it appears prudent that all patients with localized prostate cancer should have this management option. PMID 1600492

(The terms *active surveillance*, *deferred therapy*, and *watchful waiting* are widely accepted by doctors and patients to mean not treating early-stage prostate cancer until it is clear that it is really necessary.)

The main problem with these studies is that no one is really able to say which patients have localized, low-grade prostate cancer. That will only happen when there have been

successful clinical trials of a technology that can accurately determine the extent, grades, and locations of the tumors.

Nevertheless, similar studies are still being funded—some with government grants.

7. If a man's PSA (prostate-specific antigen) level suddenly rises between tests, it suggests the existence or recurrence of prostate cancer. If it suddenly falls, it might hide a real cancer or recurrence. Does sexual activity a day or two before a test cause PSA levels to briefly rise or fall? In spite of the many studies that have been done, there was still no agreement on this subject by the first half of 2015.

PSA LEVELS FOLLOWING EJACULATION

NO EFFECT	SIGNIFICANT EFFECT
Urology, 1998 PMID 9510352 ejaculation has no clinically significant effect	Urology, 1996 PMID 8638359 a significant increase in the serum PSA ... that may persist for up to 48 hours
European Urology, 1995 PMID 7544734 ejaculation does not seem to affect the serum PSA	European Urology, 1997 PMID 9266232 a significant postejaculation serum PSA elevation does occur
Journal of Urology, 1997 PMID 8976253 there seems to be no physiological relationship between ejaculation and PSA	Journal of Urology, 1993 PMID 7688435 [there is] a physiological relationship between ejaculation and decreased serum PSA

For more about some of these studies, see *Bandolier*; March 1998 <http://goo.gl/kAl4c>

8. The journal impact factor. The pressure to publish in a major medical journal affects future studies because other researchers are more likely to trust studies published in prestigious journals. (And so are patients who search for information.)

Overthrowing the tyranny of the journal impact factor; <http://goo.gl/RAUUI>

Medical journal rankings <http://goo.gl/Ej2FZ>

9. *Lies, Damned Lies, and Medical Science*, The Atlantic, Nov. 2010

<http://goo.gl/oYfYH>

Evaluating medical studies, Jay W. Marks, M.D. <http://goo.gl/UMy4Q>

10. About double-blind trials <http://goo.gl/JEX9hs>

11. *Integrity in Authorship and Publication*, a discussion of ghostwriting, guest authorship, and self-plagiarism. <http://goo.gl/eYKz3>

A Medical Ghostwriter's Personal View <http://goo.gl/BJ2C xv>

Outside contributions are not necessarily unethical. For example, professional medical editors can help make the writing clearer for patients and physicians alike.

12. *Drug Companies & Doctors: A Story of Corruption*, a review of three books on the subject by Marcia Angell, former editor of The New England Journal of Medicine.

<http://goo.gl/22vb3H>

To find out if a study was withdrawn (*retracted*) after publication, see:

<http://retractionwatch.com>

13. One article about the failure to publish studies with negative results (*publication bias*) randomly selected 600 controlled trials of drugs reported by Clinicaltrials.gov.

The authors then searched for journal articles about those trials but could only find 303.

And those articles only reported serious adverse results 63% of the time—vs. 99% in Clinicaltrials.gov. <http://goo.gl/0TECCA>

14. *Drug development: Raise standards for preclinical cancer research* discusses the replication of studies and how to fix the problems. <http://goo.gl/GnFMfR>

15. *Peer review: a flawed process* <http://goo.gl/KKX6j>

The trouble with medical journals <http://goo.gl/BpcXx>

16. Open-access publishing http://en.wikipedia.org/wiki/Open_access

For Sale: “Your Name Here” in a Prestigious Science Journal <http://goo.gl/IPn16O>

Investigating journals: The dark side of publishing <http://goo.gl/9uJzAW>

17. The systematic review of lycopene studies PMID 22071840

Cochrane reviews used more rigorous methods than non-Cochrane reviews
PMID 19282144

Disclaimer: This overview is only intended to help readers find the most reliable information available. It is not complete, and some sources may have changed. The author is a prostate cancer survivor who created the *Hypertext Guide to Prostate Cancer Overview* (www.hypertext.org) who has spent over a thousand hours searching for reliable medical information.

Shortened URLs If a short version (URLs that begin with <http://goo.gl/>) does not work, go to the website and click on the corresponding link.

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THE MORE YOU LEARN, THE BETTER YOUR CHANCES