

Web-based radiology and medical learning resources for trainee doctors

Aim

The first article of this series discussed the use of educational resources on the Internet and how to assess their quality. This article will discuss some quality radiology and medical teaching websites likely to be of benefit to doctors both in training and in daily clinical practice.

Introduction

With the information technology revolution, clinical practice is changing rapidly. The internet can be extremely useful in daily clinical practice to increase one's knowledge base. To make the most of it one should know how to evaluate the quality of a website, as discussed in the previous article in this series, and be aware of good quality educational resources on the internet, otherwise much time may be wasted trying to find the right information. What follows is a description of some useful radiology and medicine websites. These resources should be helpful not only to doctors in training but to all clinicians in daily clinical practice.

Radiology teaching resources

A sound basic knowledge of image interpretation is important for all medical students. Some time invested in acquiring this knowledge will go a long way. It can be handy when on acute take or in a busy outpatient clinic, and you can also impress your consultant or your colleagues with your knowledge. Almost all specialties use radiology to help with patient management. There are many good quality websites which can be useful for trainee doctors and for continuing professional development, some of which are mentioned here.

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www.radiologyeducation.com

This is a multi-link site; in other words, there is a huge repository of links to other radiology teaching resources. This can be useful for the novice user when one does not know where to begin. The links have been divided according to the various sub-specialties in the radiology or the target audience, i.e. residents, medical students or patients. Some of the links are to very specialist sites, and one may also have to go through quite a few links before finding the desired site.

www.learningradiology.com

This is a comprehensive resource which can help teach the basics of image interpretation, particularly for doctors in training. It will also appeal to more senior clinicians. One may either choose to go through individual body systems or there are sections on images, lectures and notes. There is a section for medical students that has very good teaching modules which can be used by anyone keen to understand the basics of image interpretation. There is also an archive of images from the past and interesting 'case of the week' section.

MedPix

The Department of Radiology, Uniformed Services University, Bethesda, USA has produced an excellent website (rad.usuhs.edu/medpix/) to help develop a greater understanding of the imaging aspects of medicine. The target audience is radiologists, clinicians and nurse practitioners. The content can be accessed according to the organ system, pathological category or



by patient case profiles. A quiz mode is also available. Learners can also create their own personal teaching file folders. It has some organ system-based teaching modules as well, in particular chest (rad.usuhs.edu/rad/chest_review/index.html).

BrighamRAD

This is a fantastic website from the Department of Radiology, Brigham and Women's Hospital, Boston (brighamrad.harvard.edu/education/online/tcd/tcd.html). It can be searched by anatomical region, e.g. skull, or its subdivision, e.g. calvaria. There are many other options to view the cases, e.g. as unknowns, according to image modality or by a combination of parameters. One can also develop an understanding of regional anatomy by taking the anatomy module.

Other resources

There are many other radiology learning resources and it is not possible to mention all the sites. Some of the websites that can be very useful in the learning process are:

www.auntminnie.com

This is a great online resource and very popular among trainee radiologists. There is a case of the day and a large teaching file to browse. Registration is free.

European Association of Radiology e-learning initiative (www.eurorad.org)

This website has a large collection of cases arranged according to body system with good overall image quality. However, it is only accessible by those who are members of the European Society of Radiology.

www.med-ed.virginia.edu/courses/rad/

This is a good quality website that has several learning modules, ranging from basic normal radiology to various pathological categories. They are also divided according to body systems (Graham et al, 2005).

www.uhrad.com/ctarc.htm

This site has a good collection of gastrointestinal cases (Graham et al, 2006).

Medical teaching resources

There are numerous web-based medical educational resources, some of which are mentioned below. These are good sources of information for doctors in training but will also be useful for a busy hospital practitioner to keep up-to-date with medical knowledge.

www.medicalstudent.com

This is a multi-link site or a digital library with links to other sources of information. It can be very useful for those who use the internet infrequently and are not sure where to begin. The links are divided according to specialty and according to search category, for example, medical textbooks, journals, patient simulations, patient information or continued education. Virtually everything that one could be looking for is covered, ranging from links for people who want to learn statistics to links to medical resources for handheld devices.

www.emedicine.com

A comprehensive resource for learning and continued professional development, not only for medicine but also for other specialties like paediatrics, surgery, radiology, and obstetrics and gynaecology. The information is up-to-date, and there is detailed information on almost all key topics.

There are several topic-related resource centres. Once registered one can take online CME (continuing medical education) courses as well. There is a section on clinical procedures which can be very handy for the trainee. There is also the option to download many articles onto a handheld device.



The Merck Manual Online Library

The *Merck Manual for Medicine* also has an online version (www.merck.com/mmpe/index.html). The Merck manual is highly regarded and provides succinct medical knowledge, which is arranged according to body systems or can be accessed through the index. It has a multimedia section as well which has a good collection of pathological and clinical pictures. It also contains an audio and video section, the content of which mainly relates to the cardiovascular and respiratory system.

Evidence-based medicine

www.clinicalevidence.org/ceweb/conditions/index.jsp

This is a comprehensive resource of the current best evidence in making decisions about the care of individual patients. The content is divided according to body system or topic. There are links to many other valuable resources. Access involves a simple registration process or Athens login. If you are scared of statistics then there is an online course which can help improve your understanding. Its partnership with the NHS is coming to an end and one may have to pay for the service in the future.

www.eboncall.org/

This is a helpful evidence-based resource for the doctor on an acute take. The contents can be viewed as a wide variety of general topics or as CATs (critically appraised topics). These articles or CATs have been critically appraised using the best evidence and converted into the standard format.

Clinical examination skills

Some websites have been specifically designed to learn and develop bedside physical examination skills and are very useful during the training years. One such site is Connecticut Tutorials (www.conntutorials.com) which provides video clips for systematic physical examination. It has links to other clinical skills learning resources.

Many of doctors in training find it difficult to master neurological examination skills. A teaching resource from Washington University School of Medicine (www.neuro.wustl.edu/education/teaching_sites.htm) is worth mentioning. It provides good knowledge of important neurological conditions and links to more in-depth knowledge, including neurology examination sites such as neurological eye simulator, the Internet Handbook of Neurology, Internet Stroke Centre and neuroradiology files. On the down side, not all of the links work.

Conclusions

With the speed with which technology is advancing, it is important not to get lost in the information jungle but to make the most of what it can offer. The authors have tried to address the difficulties faced by medical professionals regarding how and where to look for information on the internet and how to use it for continued professional development. **BJHM**

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Graham RNJ, Perriss RW, Scarsbrook AF (2005) Subspecialty web review: Neuroradiology. *Clin Radiol* **60**: 838–9

Graham RNJ, Perriss RW, Scarsbrook AF (2006) Subspecialty web review: Gastrointestinal and hepatobiliary radiology. *Clin Radiol* **61**(5): 390–2

KEY POINTS

- There is a wealth of medical educational resources and information available on internet but the potential is not fully realized and there is not much awareness about it.
- A busy doctor can make effective use of their time if they know where to look for good quality information.
- A good understanding of basics of radiology and image interpretation is important for all doctors in training and clinicians. The web sites mentioned here will appeal not only to trainees in various clinical specialties but also to trainees in radiology.
- The quality medical web sites mentioned can be used for self-paced learning and to complement conventional teaching methods.
- The multi-link sites or the digital libraries can be excellent one-stop teaching resources for doctors in almost all clinical specialties.