

# Research for medical illustrators: searching for references

DAVID BRYSON

**The proliferation of online databases means that medical illustrators have ready access to a wide range of resources for research. This paper looks at approaches to finding references from a systematic keyword search, published bibliographies and journals of abstracts, to locally and nationally available online databases, email alerting services and full-text journals. The Internet will often provide an abstract (similar to this), however, it may still be necessary to visit a library, archive or other source to find a hard copy, particularly for older material.**

## Introduction

A reference search should be started before the details of a project are confirmed,<sup>1</sup> and should continue throughout the research of the project.<sup>2</sup> At its most basic, a reference search involves three steps:

- (1) finding a reference from an online database, hard copy version of *Index Medicus*, bibliography or journal;
- (2) locating the journals in a library; and, if not available,
- (3) visiting other libraries to find the material, or ordering via interlibrary loans.

This paper is designed to help researchers in medical illustration obtain references effectively and efficiently, avoiding some of the pitfalls along the way.

## Approaches to finding references

### *Establishing keywords for databases and subject indexes*

*Index Medicus* (or its online version Medline) is a monthly classified record of the medical literature of the world, and is available from a range of providers (<http://omni.ac.uk/medline/>). It has a series of subject categories which act as headings for the hard copy version, and keywords for online use, called the Medical Subject Headings (MeSH).<sup>3–5</sup> The Medline database uses these subject categories by providing different ways of looking at topic choices expanding to a

subject tree (*Figure 1*), or focusing to a series of subheadings (*Figure 2*).

Establishing which keywords to use is an area of expertise for librarians and researchers.<sup>6</sup> The simple approach for researching about the use of photography in plastic surgery would be to look for 'plastic surgery photography'. Unfortunately this does not find sufficient references (*Table 1*). Similarly 'child abuse photography' might not yield many references, although many of the other references about child abuse and plastic surgery will almost certainly include photographs and other ideas that may help. It is also important to search for information about the full scope of the topic. Researching photography of the cleft palate would be incomplete without looking at its origin (aetiology), types, diagnosis, treatment and prognosis, i.e., the relevance of photography in the first place.

Having seen that too large a combination of keywords can be unhelpful, so too can one keyword, which could result in a number of irrelevant references. For example, by using the keyword 'ultraviolet', references to reflected ultraviolet, fluorescence, lasers, and effect on skin and use in treatment will be found. The researcher should also be aware of American spellings when reference searching—many English words are shortened, e.g., colour becomes color; haematology—hematology; oedema—edema, etc.

Some databases allow you to truncate words—rather than photography you can use 'photo'. The truncation symbol '\$' can be used in Medline: for example, 'photo\$' will give results including photography, photomicrography and photomacrography, as well as photobiology, photodynamic, etc., if looking at a medical database.

Most databases will have a guide or help page, and it is worth looking at these before starting a search. Boolean operators are used by many database search engines, i.e., AND, NOT and OR:

AND: 'Photography AND photomicrography' will only give references that include both words.

OR: 'Photography OR photomicrography' will provide all the references for both keywords but exclude duplicates.

NOT: 'Photography NOT photomicrography' will give references to photography, but exclude those that also have photomicrography as a keyword.

It is important to be systematic in recording which keyword searches have been undertaken to avoid duplication of

Correspondence address: David Bryson BSc (Anatomy) CertEd MIM1 RMIP, Programme Coordinator Biological Imaging, School of Art and Design, University of Derby, Green Lane, Derby DE1 1RX, UK. Tel.: +44-1332-593010; Fax: +44-1332-622296; Email: D.Bryson@derby.ac.uk; Website: <http://vertigo.derby.ac.uk/BiologicalImaging/BIHP.html>

○ V I D **Subheading Display** ? Help

**Continue** Combine selections with: **OR** Tools Display Main Search Page

Subheadings for: **\*PHOTOGRAPHY**

☐ **Include All Subheadings (4443 citations)**  
 -- or choose from among these subheadings --

<input type="checkbox"/> <u>Classification</u> (1)	<input type="checkbox"/> <u>Methods</u> (969)
<input type="checkbox"/> <u>Diagnostic Use</u> (4)	<input type="checkbox"/> <u>Organization &amp; Administration</u> (5)
<input type="checkbox"/> <u>Economics</u> (14)	<input type="checkbox"/> <u>Statistics &amp; Numerical Data</u> (2)
<input type="checkbox"/> <u>Education</u> (11)	<input type="checkbox"/> <u>Standards</u> (62)
<input type="checkbox"/> <u>History</u> (114)	<input type="checkbox"/> <u>Trends</u> (4)
<input type="checkbox"/> <u>Instrumentation</u> (885)	<input type="checkbox"/> <u>Utilization</u> (2)
<input type="checkbox"/> <u>Legislation &amp; Jurisprudence</u> (3)	<input type="checkbox"/> <u>Veterinary</u> (18)
<input type="checkbox"/> <u>Manpower</u> (1)	

**Hints:**

- Subheadings can be used to restrict the focus of your search. Select one or more subheadings by clicking in the checkbox that precedes each desired subheading.
- Choose Combine with **AND** to search for the **intersection** of two or more subheadings.
- Choose Combine with **OR** to search for the **union** of two or more subheadings.
- If you do not wish to restrict the focus of your search, then select **Include All Subheadings**.
- Click the **Subheading hyperlink** to get more information about the scope of the subheading.

Figure 1. Ovid subject tree

○ V I D **Tree Display** ? Help

**Continue** Combine selections with: **OR** Tools Display Main Search Page

Tree for: **\*PHOTOGRAPHY**

Select	Subject Heading	Explode	Focus	Scope Note
<input type="checkbox"/>	<u>Diagnostic Imaging</u> (6790)	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<b>Photography</b> (10141)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Holography</u> (513)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Image Enhancement</u> (5229)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Photofluorography</u> (411)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Photogrammetry</u> (1026)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Photomicrography</u> (2276)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	<u>Investigative Techniques</u> (0)	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<b>Photography</b> (10141)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	<u>Optics</u> (4856)	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<b>Photography</b> (10141)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Holography</u> (513)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Image Enhancement</u> (5229)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Photofluorography</u> (411)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Photogrammetry</u> (1026)	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> <u>Photomicrography</u> (2276)	<input type="checkbox"/>	<input type="checkbox"/>	

Figure 2. Focusing to a series of subheadings

**Table 1.** Too tight a combination of keywords may not be very rewarding

	No. of references found
<b>Medline 1966–1999</b>	
<i>Keywords used for search:</i>	
Surgery	130,210
Surgery, plastic	3,407
Photography plastic surgery	1
Child abuse photography	14
Child abuse	546
<b>Science Citation Index 1981–1999</b>	
<i>Keywords used for search:</i>	
Child abuse photography	0
Child abuse	1,482

references and extra work. Some databases will keep a record of the searches, often called a ‘history’, which can then be printed or downloaded. There may be duplication between databases, as there is a certain amount of journal crossover.

At the time of writing, Medline only dates back to 1966, therefore it is often necessary to use *Index Medicus* which dates back to 1879, for any project that needs early references.

**Bibliographies**

Finding a bibliography can be a good starting point for research. However, be aware that the bibliography may not be accurate, up-to-date or complete. Bibliographies on general photography and medical illustration have been previously published.<sup>7–10</sup> Current awareness journals that provide lists of references (including author’s abstracts and sometimes an analysis) can also be useful.

**Going backwards**

It is useful to search through the reference section of relevant review papers where the background to a topic and recent advances are discussed. By selecting the references that seem most relevant and obtaining copies of those papers, you can work your way back to earlier references. Advances in online databases will make this easier, through reference linking services being arranged by a consortium of journal publishers.<sup>11, 12</sup>

**Journals**

Journal contents, annual and cumulative indexes are useful in searching for papers, and the abstracts sections contain papers and books relevant to the readership. Some conferences publish the abstracts or full versions of all the papers presented—these may appear as special issues of a journal, as supplements to a journal, or as publications in their own right.

**Online sources**

Many of the services detailed are coordinated by the Joint Information Systems Committee (JISC), a joint body of the Higher Education Funding Councils for England, Scotland and Wales, the Department of Education for Northern Ireland and, more recently, the Further Education Funding Councils. An information pack on the range of datasets and other information services is available (<http://www.jisc.ac.uk/>).

If you are unsure of how web browsers, the Internet and email work, a useful publication is *The student’s guide to the Internet 1999*<sup>13</sup> or the netskills WWW interactive tutorial resource website (<http://www.netskills.ac.uk/>).

**Logging on**

Many databases require a user name, password, and in some cases, a computer with an academic internet protocol (IP) address. Several databases, including the Bath Information Data Service (BIDS), Biomedical Data Service (Biomed) and the Web of Science, use the Athens authentication database and so can be accessed via a common user name and password. *Table 2* gives a list of jumping off points to databases and other online sources of information.

Universities subscribe to these services through JISC, but may also have online CD-ROM databases. These will usually be password protected or access limited to IP addresses within the University.

**Databases other than Medline**

Medline only covers a specific range of journals. Through the Biomedical Data Service, Biomed (<http://biomed.niss.ac.uk/>), you can access, not only Medline (1966 onwards), but the Nursing Collection (1995 onwards), Cancer Literature (1983 onwards) and the Cumulative Index to Nursing and Allied Health Literature CINAHL (1982 onwards) databases.

If you cannot access Biomed, there are a range of external Internet services which provide access, e.g., Biomednet (<http://www.bmn.com>). For other links to access Medline, see <http://omni.ac.uk/medline/>.

For a full range of journals, you also need to consider the Science Citation Index and the Social Sciences Citation Index and Arts & Humanities Citation Index, which are available through the Web of Science (<http://wos.mimas.ac.uk>). Another useful source of information is the National Research Register (NRR), which is free to access (<http://www.doh.gov.uk/research/nrr.htm>). This is a database of research completed or ongoing projects in the National Health Service (NHS).

Some journals provide hard copy, as well as electronic versions, of information about websites, e.g., He@lth Information on the Internet (<http://www.wellcome.ac.uk/healthinfo>) which covers medical and health related sites. Other useful publications include *Medical information on the Internet: A guide for health professionals*<sup>14</sup> and *Internet Resources for Health and Medicine*.<sup>15</sup>

J Vis Commun Med Downloaded from informahealthcare.com by 86.19.136.185 on 04/23/13  
For personal use only.

**Table 2.** Jumping off points and other online sources of information

Abbreviation	Description	Web address
AGOCG	Advisory Group on Computer Graphics	<a href="http://www.agocg.ac.uk">http://www.agocg.ac.uk</a>
AHDS	Arts and Humanities Data Service	<a href="http://ahds.ac.uk">http://ahds.ac.uk</a>
BIDS	Bath Information and Data Service	<a href="http://bids.ac.uk/">http://bids.ac.uk/</a>
BIOMED	Biomed, CINAHL, Cancer Literature and Nursing Collection	<a href="http://biomed.niss.ac.uk/">http://biomed.niss.ac.uk/</a>
British Library		<a href="http://portico.bl.uk/">http://portico.bl.uk/</a>
BUBL	National information service for Internet resources of academic relevance.	<a href="http://www.bubl.ac.uk">http://www.bubl.ac.uk</a>
BUFVC	The British Universities Film & Video Council	<a href="http://www.bufvc.ac.uk">http://www.bufvc.ac.uk</a>
COPAC	Confederation of Online Public Access Catalogues	<a href="http://www.copac.ac.uk">http://www.copac.ac.uk</a>
DofH	Department of Health	<a href="http://www.doh.gov.uk">http://www.doh.gov.uk</a>
LTSN	Learning and Teaching Support Network	<a href="http://www.ltsn.ac.uk">http://www.ltsn.ac.uk</a>
NRR	National Research Register (NHS)	<a href="http://www.doh.gov.uk/research/nrr.htm">http://www.doh.gov.uk/research/nrr.htm</a>
NISS	Network and Information Services for Higher Education	<a href="http://www.niss.ac.uk">http://www.niss.ac.uk</a>
RDN	Resource Discovery Network, including BIOME Health and Life Sciences	<a href="http://www.rdn.ac.uk">http://www.rdn.ac.uk</a> <a href="http://biome.ac.uk">http://biome.ac.uk</a>
SCURL	Scottish Confederation of University Research Libraries	<a href="http://scrul.bubl.ac.uk">http://scrul.bubl.ac.uk</a>
UK OPACs	University Libraries Sites	<a href="http://www.webmaster.bham.ac.uk/ukuwww.html">http://www.webmaster.bham.ac.uk/ukuwww.html</a> <a href="http://www.ex.ac.uk/library/uklibs.html">http://www.ex.ac.uk/library/uklibs.html</a> <a href="http://www.niss.ac.uk/lis/obi/obi.html">http://www.niss.ac.uk/lis/obi/obi.html</a>
UK Libraries Plus		<a href="http://www.lisa.sbu.ac.uk/uklibrariesplus">http://www.lisa.sbu.ac.uk/uklibrariesplus</a>
Web of Science		<a href="http://wos.mimas.ac.uk">http://wos.mimas.ac.uk</a>
Wellcome	Library especially History of Medicine	<a href="http://library.wellcome.ac.uk/">http://library.wellcome.ac.uk/</a>
WISDOM	Suite of databases produced by the Information Service at the Wellcome Trust.	<a href="http://wisdom.wellcome.ac.uk/Outline">http://wisdom.wellcome.ac.uk/Outline</a>

### Accessing library catalogues, OPACs and COPAC

A directory of library catalogues and services in Britain and Ireland is maintained by the Network and Information Services for Higher Education gateway site (NISS), formerly JANET-OPACS, (<http://www.niss.ac.uk/lis/obi/obi.html>). Not all OPAC (Online Public Access Catalogue) systems have a web front end, but use a program called 'Telnet', which is a menu-driven system. *The student's guide to the Internet 1999* provides a short guide to using Telnet.<sup>16</sup>

The Confederation of Online Public Access Catalogues (COPAC) provides access via your web browser to several OPACs at once. There is also a similar service that covers the Scottish University Research Libraries (SCURL). However, not all libraries are included so the list of libraries holding journals or books is not definitive.

### E-mail alerting services

It is possible through the BIDS ingenta Auto Journals service (<http://www.bids.ac.uk/>), and journal publishers such as Taylor & Francis Ltd. (<http://www.tandf.co.uk/journals>), to have abstracts from relevant journals sent to you by e-mail. Some libraries will also provide an abstracting service to students and staff for journals they hold in stock.

### Full-text journal sources

Increasingly, journal publishers are putting current issues online as portable document files (Adobe® PDF), or via real pages e.g. IDEAL (<http://www.idealibrary.com>.) and CatchWord (<http://www.catchword.com>). Access to full-text versions of papers is usually limited to those journals subscribed to by you, your library or organization.



## Getting hold of books and journals

### Copyright libraries

The British Library (<http://portico.bl.uk/>) is a copyright library. Publishers have a legal obligation to send on a copy of every work published in the United Kingdom and Republic of Ireland, to the Legal Deposit Office of the British Library within one month of publication.

Deposit regulations, with slightly different conditions, also apply to the other five legal deposit libraries in the British Isles, through the Copyright Libraries Agency (<http://www.llgc.org.uk/cla/>):

- Bodleian Library, Oxford (<http://www.bodley.ox.ac.uk>)
- University Library, Cambridge (<http://www.lib.cam.uk>)
- National Library of Scotland, Edinburgh (<http://www.nls.ac.uk>)
- Library of Trinity College, Dublin, (<http://www2.tcd.ie/library/>)
- National Library of Wales, Aberystwyth (<http://www.llgc.org.uk/index.htm>)

The British Library also provides other resources, e.g., The Health Care Information Service (<http://portico.bl.uk/services/stb/hcis.html>) offers comprehensive coverage of medicine and health care across several British Library services.

### National health service: medical library and information services

All NHS staff are entitled to use their local Medical Library and Information Services, which will have a range of general and specialist books and journals and other materials. Some will provide Internet access to a range of databases depending on which have been purchased. In England, these are subscribed to by Regional Health Authorities for all health services in their region.

### Document supply services

Commonly called InterLibrary Loans this is a service organized by the British Library's Document Supply Centre (<http://www.bl.uk/services/bsda/dsc/delivery.html>) to allow access to papers and books not held in local libraries. Some libraries have collaborative arrangements with other libraries in a region, e.g., SHINE, the Scottish Health Information Network (<http://www.show.scot.nhs.uk/shine/>).

### Professional bodies and other organizations

Professional associations and organizations, including the Royal Photographic Society,<sup>17</sup> the British Medical Association (<http://web.bma.org.uk/homepage.nsf>),<sup>18</sup> the Royal College of Surgeons,<sup>19</sup> and the National Museum of Photography Film and Television<sup>20</sup> subscribe to journals or have an archive of historical material.

Most libraries hold directories to associations in their reference sections, and their websites can be found through NISS (<http://www.niss.ac.uk/world/prof-bodies.html>).

## Archives

Archives are often based in libraries or around library or museum collections, e.g., the Wellcome collection includes the archive of Henry Wellcome,<sup>21</sup> as well as a library and reference collection. Kodak Ltd. has an archive, the Kodak Research Information Library and Report Centre, based in Harrow which includes journals and data sheets. The Royal Photographic Society has an archive of photographs and a collection of journals—the latter is on a card index, not online.

## Organizing your references

You can either start writing your bibliography straightaway, or use a card index to keep on top of your references. A database can be created using a program such as AppleWorks™ or Filemaker Pro®. There are also specialized reference managers such as Procite®. For more information on bibliographic software see [http://www.cse.bris.ac.uk/~ccmjs/papyrus\\_section.html](http://www.cse.bris.ac.uk/~ccmjs/papyrus_section.html).

Common referencing and citation systems in use include Harvard ([http://lib.derby.ac.uk/library/citing\\_and\\_referencing.htm](http://lib.derby.ac.uk/library/citing_and_referencing.htm)), Chicago (<http://www.lib.ohiostate.edu/guides/chicagogd.html>) and Vancouver (description at the back of this journal). Programmes of study and university libraries will have copies of the approved format for your particular research project. Checking your reference details carefully is vital, as those from journals and books are frequently inaccurate or incomplete.<sup>22</sup>

## Conclusions

There has never been a greater quantity of information available for research in the medical sciences and the range of services available are continually being expanded and improved. *Table 2* provides a list of websites which will help in any search for references and other research resources. The references you need are out there, they may take some finding, but they should provide a strong basis for any research project—the journey is worth the effort.

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