

## CME Article

# Effective Medical Writing

Pointers to getting your article published

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## Getting to know journal bibliographic databases

### ABSTRACT

**A bibliographic database is an organised digital collection of references to published literature. A bibliographic database may be general in scope or may cover a specific academic discipline. There are many types of medical and general bibliographic databases. They cover biomedical and scientific literature, morbidity and mortality statistics, therapeutic regimens, medical records, images and reviews of evidence-based medicine. Getting to know these databases will help researchers and authors to enhance their writing and publishing endeavours.**

**Keywords: abstracting, bibliographic databases, citation, indexing, journal**

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### INTRODUCTION

There are many types of medical bibliographic databases. They cover biomedical and scientific literature, morbidity and mortality statistics, therapeutic regimens, medical records, images and reviews of evidence-based medicine.

A bibliographic database is an organised digital collection of references to published literature, including journal and newspaper articles, conference proceedings, reports, government and legal publications, patents and books. They generally contain informative subject descriptions in the form of keywords, subject classification terms or abstracts. In medicine, bibliographic databases are essential search tools for research and clinical practice, providing the latest scientific insights for evidence-based medicine.<sup>(1-3)</sup>

As tens of thousands of biomedical journals are published worldwide, most bibliographic databases index only those that meet their requirements. Selection criteria are usually based on a number of factors, such as whether the journal is peer reviewed; the number of citations (the number of times an article is cited/referred to by authors) in the literature; the impact factor (the number of citations the articles in a journal receive in a given year or years divided by the number of articles published); how long the journal has been established; and the language of publication. Most databases contain the article citations and selected abstracts, but some contain the full text or links to the full-text sources.<sup>(1)</sup>

A large number of bibliographic databases are still proprietary and available commercially. Many bibliographic databases evolve into digital libraries, providing the full text of the indexed contents. Others converge with non-bibliographic scholarly databases to create more complete disciplinary search engine systems, such as Chemical Abstracts or Entrez.

### GENERAL MEDICAL DATABASES

Many bibliographic databases cover various aspects of medical and scientific literature, and may be relevant to the medical researcher. Probably the most widely used databases within this discipline are PubMed, MEDLINE and EMBASE.

**PubMed** ([www.ncbi.nlm.nih.gov/pubmed/](http://www.ncbi.nlm.nih.gov/pubmed/)) is a free database that provides access to the MEDLINE database of citations, abstracts and some full-text articles, covering life sciences and biomedical topics. It is maintained by the United States (US) National Library of Medicine (NLM) at the National Institutes of Health

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(NIH). PubMed comprises more than 20 million citations for biomedical literature from MEDLINE, life science journals and online books. Citations may include links to full-text content from PubMed Central and publisher web sites. It is part of the Entrez information retrieval system, and gives users a way to retrieve the collected information and access citations in MEDLINE. As of October 2010, PubMed contains approximately 20 million citations going back to 1865. PubMed (which encompasses MEDLINE) is the database of choice for both researchers and clinicians to locate relevant articles, and in many cases, it links directly to a publisher's site for the full text.

**MEDLINE** ([www.nlm.nih.gov/databases/databases\\_medline.html](http://www.nlm.nih.gov/databases/databases_medline.html)) is the US NLM premier bibliographic database that contains over 18 million references to journal articles in medicine, nursing, dentistry, veterinary medicine, the healthcare system and the preclinical sciences. MEDLINE is the primary component of PubMed. A distinctive feature of MEDLINE is that the records are indexed with NLM's Medical Subject Headings (MeSH).

In addition to PubMed, MEDLINE can also be accessed through an EBSCO interface and an ISI interface, all of which access the same database (MEDLINE), but each has different capabilities and functions. In other words, database services like PubMed are one of several ways to access MEDLINE. An increasing number of MEDLINE citations contains a link to the free full text of the article archived in PubMed Central or to other sites. You can also link from many MEDLINE references to the publisher website, or to other full-text providers to request or view the whole article.

**EMBASE** ([www.embase.com](http://www.embase.com)), the Excerpta Medica database, is a biomedical and pharmacological database produced by Elsevier, and contains over 11 million records of articles starting from 1974. Each record is fully indexed and covers over 5,000 biomedical journals from 70 countries. About 30% of journals that may be searched through EMBASE also appear in MEDLINE; however, EMBASE has a more European emphasis than MEDLINE and includes more non-English language biomedical journals than MEDLINE. Thus, it is useful for identifying citations in non-English language journals. EMBASE is a subscription-only database that is available mostly through university or medical libraries.

**PubMed Central (PMC)** ([www.ncbi.nlm.nih.gov/pmc/](http://www.ncbi.nlm.nih.gov/pmc/)) is the US NIH free digital archive of biomedical and life sciences full-text journal articles. It contains over 2 million articles, most of which have a corresponding entry in PubMed. All the articles in PMC are free. It is developed and managed by the NLM with the aim of preserving and maintaining access to electronic literature.

#### **SPECIALIST BIOMEDICAL DATABASES**

There are a number of databases covering specialised biomedical areas, ranging from complementary medicine to allied health sciences. Here, we provide brief descriptions of some of them. Box 1 shows a list of the commonly-used databases.

**The Cochrane Library** ([www.thecochranelibrary.com](http://www.thecochranelibrary.com)) was developed by The Cochrane Collaboration ([www.cochrane.org/](http://www.cochrane.org/)) and is the most important resource for evidence-based medicine, containing databases of systematic reviews, clinical trials, economic evaluations and methodologies. The most important is the database of systematic reviews, which summarises and interprets the results of medical research, in particular, randomised controlled trials.

**Global Health** ([www.cabdirect.org/](http://www.cabdirect.org/)), produced by CAB International, has been dedicated to international public health and tropical disease research since 1973, and covers 3,500 journals as well as books, conference proceedings and reports. Global Health has excellent coverage of health in the developing countries, and its sister database Global Health Archive ([www.cabdirect.org/](http://www.cabdirect.org/)) covers the history of public health and research from the end of the 19th century to 1972.

**Clinical Evidence** ([clinicalevidence.bmj.com/ceweb/index.jsp](http://clinicalevidence.bmj.com/ceweb/index.jsp)), published by the BMJ Group, provides summaries to improve clinical decisions and patient care based on systematic reviews of evidence. It is regularly updated when new evidence is published. It is a subscription service but is available to developing countries free of charge or at a reduced rate through HINARI.

**POPLINE** ([www.popline.org](http://www.popline.org)) is a database of reproductive and sexual health, fertility, family planning and population issues. This database is produced from the combined resources of a number of population centres in the US, and contains journal articles, reports, unpublished material, books and conference papers.

**Box 1 Specialist Biomedical Databases:**

- AIDSinfo: [www.aidsinfo.nih.gov/](http://www.aidsinfo.nih.gov/)
- Allied and Complementary Medicine Database (AMED): [www.bl.uk/reshelp/findhelpsubject/scitectenv/medicinehealth/amed/amed.html](http://www.bl.uk/reshelp/findhelpsubject/scitectenv/medicinehealth/amed/amed.html)
- BioMed Central Databases: [databases.biomedcentral.com/browsecatalog](http://databases.biomedcentral.com/browsecatalog)
- Clinical Evidence: [clinicalevidence.bmj.com/ceweb/index.jsp](http://clinicalevidence.bmj.com/ceweb/index.jsp)
- The Cochrane Library: [www.thecochranelibrary.com](http://www.thecochranelibrary.com)
- Cumulative Index to Nursing and Allied Health Literature (CINAHL) Databases: [www.ebscohost.com/cinahl/](http://www.ebscohost.com/cinahl/)
- Center for International Rehabilitation Research Information & Exchange (CIRRIE) Database of International Rehabilitation Research: [cirrie.buffalo.edu/search/index.php](http://cirrie.buffalo.edu/search/index.php)
- DynaMed: [www.ebscohost.com/dynamed/](http://www.ebscohost.com/dynamed/)
- EBSCO Medical Databases: [www.ebscohost.com/](http://www.ebscohost.com/)
- Essays on the APS Classic Papers: [www.the-aps.org/publications/classics/](http://www.the-aps.org/publications/classics/)
- Global Health: [www.cabdirect.org/](http://www.cabdirect.org/)
- Health Management Information Consortium Database (HMIC): [www.ovid.com/site/products/ovidguide/hmicdb.htm](http://www.ovid.com/site/products/ovidguide/hmicdb.htm)
- National Center for Complementary and Alternative Medicine: [nccam.nih.gov/research/camonpubmed/](http://nccam.nih.gov/research/camonpubmed/)
- POPLINE (POPulation information onLINE): [www.popline.org](http://www.popline.org)
- PsycINFO (abstract database of psychological papers): [www.apa.org/pubs/databases/psycinfo/index.aspx](http://www.apa.org/pubs/databases/psycinfo/index.aspx)
- TOXLINE (Toxicology Literature Online, a bibliographic database for toxicology): [toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?TOXLINE](http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?TOXLINE)

**GENERAL DATABASES****Thomson Reuters Web of Knowledge**

([www.wokinfo.com](http://www.wokinfo.com))

Thomson Reuters, formerly known as Institute for Scientific Information (ISI), is a citation indexing and research service covering more than 23,000 journals and 110,000 proceedings from the sciences, social sciences, arts and humanities. It provides bibliographic content and the tools to access, analyse and manage research information. Its multidisciplinary databases, including the Web of Science (WOS), can be searched simultaneously.

**Web of Science** ([www.wokinfo.com](http://www.wokinfo.com))

The Science Citation Index (SCI) is the predecessor of WOS. This database allows a researcher to identify which later articles have cited a particular article published earlier or the articles of any particular author, and to determine which articles have been cited most frequently. It is a subscription database to which many university libraries provide access.

WOS is a multidisciplinary database of abstract and citation data, that includes tools to track and analyse research output. It has a coverage from more than 10,000 journals dating back to 1900. WOS consists of six databases: Science Citation Index Expanded (covers over 7,100 major journals across 150 disciplines); Social Science Citation Index; Arts and Humanities Citation

Index; Conference Proceedings Citation Index; Index Chemicus; and Current Chemical Reactions.

WOS is different from other “abstracts and indexing” databases because of the strict journal selection process. Journals selected for WOS will have their impact factor calculated by the Journal Citation Report (JCR). JCR offers a systematic and objective means to critically evaluate all internationally peer-reviewed influential journals, across all publishers with quantifiable, statistical information based on citation data. By compiling articles’ cited references, JCR helps to measure research influence and impact at the journal and category levels, and shows the relationship between citing and cited journals.

**Scopus** ([www.scopus.com/scopus/home.url](http://www.scopus.com/scopus/home.url))

Scopus is a new abstract and citation database, as well as a web-based research tool provided by Elsevier. It is the largest collection of articles worldwide from the life, health and physical sciences as well as social sciences disciplines, containing 25 million abstracts from over 18,000 peer-reviewed journals. Scopus includes web pages, patents, “articles-in-press”, and other selected sources (institutional repositories, digital archives, and special subject collections), as well as 100% coverage of MEDLINE material. Searches on Scopus offer many features, including the number of times an article has been referred to, and by which authors. Scopus also includes tools to track and analyse research output.

**Directory of Open Access Journals**

([www.doaj.org/](http://www.doaj.org/))

The Directory of Open Access Journals (DOAJ) aims to be comprehensive and to cover all open access scientific and scholarly journals that use a quality control system to guarantee the content. The aim of the directory is to increase the visibility and ease of use of open access journals, thereby promoting their increased usage and impact. DOAJ is hosted, maintained and partly funded by Lund University Libraries Head Office. All the contents are freely available. There are now 5,644 journals in the directory from over 1,000 publishers.

**WHO Global Health Library**

([www.globalhealthlibrary.net/php/index.php](http://www.globalhealthlibrary.net/php/index.php)).

Some of the regional offices of the World Health Organization (WHO) have produced their own Index Medicus, which includes regional medical journals that are not indexed in the western bibliographic databases. This constitutes a unified database from Africa, the Eastern Mediterranean, the Pan-American region and the Western Pacific. Other databases from the European and Southeast Asian regions are also available from this site. Some examples are the Western Pacific Region Index Medicus (WPRIM) ([www.wprim.org/](http://www.wprim.org/)); Index Medicus for the WHO Eastern Mediterranean Region (IMEMR) ([www.who.int/library/databases/emro/en/](http://www.who.int/library/databases/emro/en/)); African Index Medicus (AIM) ([indexmedicus.afro.who.int/](http://indexmedicus.afro.who.int/)); Index Medicus for South-East Asia Region (IMSEAR) ([imsear.hellis.org/](http://imsear.hellis.org/)); and Latin American and Caribbean Health Science Literature (LILACS) ([lilacs.bvsalud.org/en/](http://lilacs.bvsalud.org/en/)).

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**HINARI Access to Research in Health Programme** ([www.who.int/hinari/en](http://www.who.int/hinari/en))

The HINARI Programme, set up by WHO together with several major publishers, enables developing countries to gain access to one of the world's largest collections of biomedical and health literature. More than 7,000 journal titles are now available to health institutions in HINARI-qualified countries all over the world, thus benefitting many thousands of health workers and researchers.

**SUMMARY**

A bibliographic database is an organised digital collection of references to published literature. A bibliographic database may be general in scope or may cover a specific academic discipline. There are several reputable general medical, as well as specialist databases that are commonly used. Getting to know these databases and using them effectively will help researchers and authors to enhance their writing and publishing endeavours.

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**SINGAPORE MEDICAL COUNCIL CATEGORY 3B CME PROGRAMME**  
**Multiple Choice Questions (Code SMJ 201010A)**

	True	False
<b>Question 1.</b> The functions of a journal bibliographic database include:		
(a) An organised collection of published literature.	<input type="checkbox"/>	<input type="checkbox"/>
(b) Provides search tools for research.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Contains informative subject descriptions such as keywords.	<input type="checkbox"/>	<input type="checkbox"/>
(d) Provides free full-text articles.	<input type="checkbox"/>	<input type="checkbox"/>
 <b>Question 2.</b> Some examples of biomedical databases include:		
(a) MEDLINE.	<input type="checkbox"/>	<input type="checkbox"/>
(b) POPLINE.	<input type="checkbox"/>	<input type="checkbox"/>
(c) INSPEC.	<input type="checkbox"/>	<input type="checkbox"/>
(d) BioMed Central.	<input type="checkbox"/>	<input type="checkbox"/>
 <b>Question 3.</b> What is the difference between MEDLINE and PubMed?		
(a) Both are created by the US National Library of Medicine.	<input type="checkbox"/>	<input type="checkbox"/>
(b) The subject scope of MEDLINE is biomedicine and health.	<input type="checkbox"/>	<input type="checkbox"/>
(c) MEDLINE is the largest component of PubMed.	<input type="checkbox"/>	<input type="checkbox"/>
(d) MEDLINE has more citations than PubMed.	<input type="checkbox"/>	<input type="checkbox"/>
 <b>Question 4.</b> The following statements regarding the Web of Science are true:		
(a) Its predecessor is the Science Citation Index.	<input type="checkbox"/>	<input type="checkbox"/>
(b) It is a free database.	<input type="checkbox"/>	<input type="checkbox"/>
(c) It is one of the databases of the Web of Knowledge.	<input type="checkbox"/>	<input type="checkbox"/>
(d) It generates the Journal Citation Report.	<input type="checkbox"/>	<input type="checkbox"/>
 <b>Question 5.</b> The selection criteria for indexing journals include:		
(a) The number of citations.	<input type="checkbox"/>	<input type="checkbox"/>
(b) How long the journal has been established.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Cost of the subscription.	<input type="checkbox"/>	<input type="checkbox"/>
(d) Whether the journal is peer reviewed.	<input type="checkbox"/>	<input type="checkbox"/>

**Doctor's particulars:**

Name in full: \_\_\_\_\_

MCR number: \_\_\_\_\_ Specialty: \_\_\_\_\_

Email address: \_\_\_\_\_

**SUBMISSION INSTRUCTIONS:**

1) Log on at the SMJ website: <http://www.sma.org.sg/cme/smj> and select the appropriate set of questions. (2) Select your answers and provide your name, email address and MCR number. Click on "Submit answers" to submit.

**RESULTS:**

(1) Answers will be published in the SMJ December 2010 issue. (2) The MCR numbers of successful candidates will be posted online at [www.sma.org.sg/cme/smj](http://www.sma.org.sg/cme/smj) by 15 December 2010. (3) All online submissions will receive an automatic email acknowledgment. (4) Passing mark is 60%. No mark will be deducted for incorrect answers. (5) The SMJ editorial office will submit the list of successful candidates to the Singapore Medical Council.

**Deadline for submission: (October 2010 SMJ 3B CME programme): 12 noon, 8 December 2010.**