**HealthGate Evidence-Based Medicine Clinical Guidelines.**

Healthgate Data Corporation, 25 Corporate Drive, Suite 310, Burlington, MA 01803; 800.434.4283; guidelinesupport@healthgate.com; http://www.healthgate.com; contact for pricing.

HealthGate Evidence-Based Medicine (EBM) Clinical Guidelines (formerly, EBM Solutions) is a collection of evidence-based guidelines on more than 100 health topics. Each guideline is well researched, and levels of evidence, using the evidence grading of the American College of Chest Physicians, are noted throughout. Each guideline has separate sections for providers and patients. Creators of the guidelines come from various institutions, including Duke University Medical School, Emory University Medical School, Oregon Health & Science University, and Vanderbilt University Medical School.

Each provider guideline is arranged in fourteen sections (as noted in the help section):
- **Key Points:** summary of the most important information and conclusions in the guideline
- **EBM Highlights:** links to tables and figures, Websites, and clinical indicators
- **Decision Tree:** algorithms used to assist clinicians in making evidence-based care decisions
- **Definition:** general overviews of the condition
- **Significance:** information about the relevance of the condition to individuals and the community’s health
- **Causes:** known and potential causes of the condition
- **Symptoms and Signs:** most common clinical signs and symptoms of the condition
- **Screening and Diagnosis:** most common procedures for screening and diagnosis
- **Prevention and Treatment:** most common prevention and treatment strategies
- **Complementary/Alternative Medicine:** risks and potential benefits of alternative therapies
- **Prognosis:** likely outcome after being diagnosed with the condition and potential treatment outcomes
- **Research Frontiers:** overview of current studies and new therapies that may affect future treatment and prevention strategies
- **References:** references with links to PubMed abstracts
- **About the Author:** information regarding the background, education, and expertise of the primary author(s) of the guideline

Patient guidelines have the same sections, though some of the sections use different terminology, for example, “description” rather than “definition” and “importance” rather than “significance.” The patient guidelines are written at a tenth- to eleventh-grade reading level. Some sections of the patient guidelines are written at a lower grade level. Each guideline has links to other provider guidelines, with fewer references in the Reference section, some of which may not be in the provider guideline.

The topics are listed under twenty categories: Cancer; Cardiology; Ear, Nose, and Throat; Endocrine/Metabolic; Gastrointestinal; Hematology; Infectious Diseases; Mental/Behavioral Health; Neurology; Ophthalmology; Orthopedics; Pediatrics; Prevention; Pulmonology; Renal; Reproductive Health; Special Topics; Symptoms; Urology; and Women’s Health.

Each guideline has links to other pertinent topics in HealthGate, as well as links to other resources, including clinical trials and reports. Decision trees include links to appropriate diagnosis and treatment information. The References section links to abstracts in PubMed. Diagrams and illustrations are used when appropriate.

Each guideline section is brief and well written. However, it is not possible to see a guideline as a whole or print out an entire guideline. Each section must be read, downloaded, or printed individually. Although the guidelines have current references, no information is available about when the guideline was written or updated. In the References section, it is not possible to see which reference refers to which part of the guideline.

Keywords can be searched through a simple search feature throughout all the guidelines, in a particular guideline, or in a particular section of the guidelines. Each result links to the section of the guideline where the keyword is mentioned. However, the limits are not cleared out after each search, so a searcher must remember to clear search limits before beginning another search.

Accessibility issues include the inability to use the browser back button to move around in the guideline. Each section must be accessed by using the left-hand menu. Another possible complication is that the pop-up feature is used liberally, and those who routinely have pop-ups blocked need to make some modifications to their computer set-up.

A number of user aids for this product are available, including a help page, a frequently asked questions (FAQ) page, and a thirty-six-page manual. It is also easy to contact the company through email or a feedback link.

These guidelines cover some of the most often diagnosed conditions and diseases, so they are very handy for quickly finding the best evidence. However, the fact that no dates are attached to the guidelines impedes knowing how recent the information is. The guidelines are much more concise than the Cochrane Database of Systematic Reviews or UpToDate, and the information is more easily accessible. Its major drawbacks are its limited scope and the architecture of the guidelines.

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Physiotherapy Evidence Database (PEDro). Centre for Evidence-Based Physiotherapy, School of Physiotherapy, The University of Sydney, P.O. Box 170, Lidcombe 825 NSW, Australia; +61.2.9351.9547; fax, +61.2.9351.9278; http://www.pedro.fhs.usyd.edu.au; free Website.

Building on private citation databases of the Steering Committee of the Centre for Evidence-Based Physiotherapy, School of Physiotherapy, The University of Sydney, and contributions of abstracts of randomized controlled trials of physical therapy from the Cochrane project, the Physiotherapy Evidence Database Database was launched on the Web in 1999. Commonly known as “PEDro,” the purpose of the database according to the Website is “to give rapid access to bibliographic details and abstracts of randomised controlled trials (RCTs), systematic reviews, and evidence-based clinical practice guidelines in physiotherapy.”

“Physiotherapy” is the term used outside of the United States regarding the treatment of pain, injury, or disability through physical means. “Physical therapy” is the term used most in the United States, where the scope of practice can vary widely. Currently, more than 180 US professional programs offer a doctor of physical therapy degree, and around 90 offer a master of physical therapy degree, both of which are entry-level degrees needed for licensure examinations in the field. The profession and its supporting literature developed following the first and second World Wars.

PEDro helps fill the void of a comprehensive international index to the physical therapy literature. Currently, literature searches must be conducted among each of the major medical indexes (that is, the EMBASE, MEDLINE/PubMed, PsycINFO, and CINAHL databases) to form a complete picture of the literature published in the field. For those seeking evidence-based practice information, even expert searchers and librarians, the process of figuring out evidence-based quality filters in each of these databases is overwhelming, never mind the peccadilloes of particular publisher’s search engines! PEDro, therefore, has the potential to be a “go-to” source for citations to evidence-based physical therapy literature.

The fact that the Website does not charge for searching does not necessarily give it a “free pass” to be added to a medical library’s Web page. Clearly written selection criteria for each of the three types of literature that constitute the database can be located on the Website.

Citations of RCTs, guidelines, and systematic reviews are added to the database upon retrieval by a set of quality filters in preformatted search strategies (also known as SDIs), which are performed automatically in the above databases on a regular basis. Further, the Cochrane Database of Effective Systematic Reviews, the Cochrane Clinical Trials Register, and the Database of Abstracts of Reviews of Effectiveness (DARE) are searched for new material when they are updated.

A cadre of volunteers, known as “Friends of PEDro,” assists the Centre for Evidence-Based Physiotherapy to identify other citations and links to practice guidelines to be added to the database, but it is unclear just who the editorial board reviewing and approving the recommendations is. The editorial board, if any, is not identified on the PEDro Website. However, the fact that recommendations of additions, deletions, or corrections can be forwarded via email and that detailed criteria of selection are published leads one to believe that subject authorities are making the editorial decisions, not the civil service staff.

Major features

What impresses librarians, besides the fact that PEDro is free, is that PEDro rates randomized clinical control trials according to the “PEDro Rating Scale,” a rubric consisting of 11 criteria. The rating scale is a checklist of “yes or no” answers to each criteria that totals the “yes” answers. The highest score is therefore an 11, which would make that trial of particular interest. A team of volunteer physiotherapists and “casual” center staff apply the rating scale to each RCT in the database. The PEDro Rating Scale has been studied for reliability of rating quality of RCTs in an article published in Physical Therapy [2003 Aug;83(8):713–21]. Also, an article comparing the PEDro scale to the Jadad scale for rating the quality of randomized controlled trials has been published in the Journal of Clinical Epidemiology [2005 58:668–73].

The oldest citation in the database, according to the Website, was published in 1929, and recommendations for additions or corrections of the information included are welcome. Even though trials may be judged to be of poor quality by this scale, they are not removed from the database. Ratings are subject to revision on further review.

Searching the database is straightforward. By clicking on Search, a pull-down menu appears. The Simple Search screen allows input of search terms in one search box. Under Advanced Search, a set of search criteria can be applied based on typical bibliographic search criteria such as author, title, source, date, abstract or title words, and citation entry date. Additional limits as to therapeutic modality, body part, type of problem, subdiscipline, and document type can be applied.

Results are displayed by title, method (i.e., type of article), and rating scale. Systematic reviews appear first followed by clinical practice guidelines, both in reverse chronological order. The remaining citations are sorted by PEDro Rating Scale score. Complete citation information is displayed after clicking on the title of the article, and links to full-text practice guidelines or PubMed records are available in many records. It is helpful that results can be reviewed and selected for printing or emailing after all results are reviewed, as is standard in many commercial databases.

The Centre for Evidence-Based Physiotherapy should be congratulated for their support of this database, which is a substantial com-
mitment for a nonprofit educational institution in any part of the world. The list of Australian supporters is a good example of a collaboration of multitype national and local health care stakeholders for the sake of the nation’s health. Additional support comes from the Australian Physiotherapy Association, the Motor Accident Authority of New South Wales (Australia), and other organizations. International support by individuals is prominent. Through the efforts of international volunteers, the Website search engine and informational pages are published in French, German, Arabic, Korean, Portuguese, and Spanish.

Although not clearly defined in the help files, it is apparent that literature indexed in PEDro is limited to English language publications. The database is updated on a monthly basis.

**Advantages/disadvantages**

PEDro’s nonprofit status and the sponsorship of the University of Sydney and the Australian Physiotherapy Association establish the database as a highly credible, authoritative source with multiple levels of review. Links to full-text practice guidelines from other Internet locations are provided to facilitate access. Since its establishment in 1999, physical therapists and medical librarians have come to identify “PEDro” with evidence-based physical therapy practice. However, PEDro is not a full-text resource and cannot be customized to local institutional needs. The ability to link to journal collections through OpenURL, as in PubMed’s LinkOut, should be investigated by the developers. Librarians know that clinical practitioners and students want that full-text article and complain when it is not available through the database in which a particular citation is located.

Searchers sometimes find that PEDro does not respond to search queries or that the Website is unavailable. It is unclear whether this is due to a limit on the number of searchers who can access the database simultaneously or to network connection problems. The database is usually available after a few minutes’ wait.

### Similar resources

The American Physical Therapy Association’s (APTA) evidence-based practice initiative, Hooked on Evidence, differs significantly from the scope of PEDro. Hooked on Evidence is a membership benefit of the APTA or available through subscription to physical therapy professionals only. Hooked on Evidence uses volunteer groups of professionals to recommend articles for submission to the database and to compile and publish short synopses of them. In addition to systematic reviews and practice guidelines, Hooked on Evidence also includes non-peer-reviewed resources and Websites that are compatible with evidence-based practice.

It should be noted that the physical therapy and occupational therapy literature have some overlap, but are distinct fields of practice. Citations to occupational therapy literature will be found in PEDro; but some occupational therapy resources are not searched systematically for inclusion in the database. Following the publication of PEDro in 1999, a parallel initiative in the field of occupational therapy was undertaken by the University of Queensland and University of Western Sydney to establish OT Seeker (<http://www.otseeker.com>) in 2002, with similar goals to facilitate evidence-based practice.

### Conclusion

PEDro is recommended for inclusion in presentations and programs on evidence-based health care practice and for library resource pages at institutions with professional preparation programs for rehabilitation professions.

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**Clinical Evidence.** BMJ Publishing Group, BMA House, Tavistock Square, London WC1H 9JP, United Kingdom; 800.373.2897; fax, 240.646.7005; clinevid@pmds.com; http://www.clinicalevidence.com; pay per view, individual subscriptions, and site licenses available, contact for pricing; free in England, Wales, Scotland, and developing countries.

Clinical Evidence (CE), a Website developed by the BMJ Publishing Group, is the electronic version of the print CE Full Print and CE Concise. The information included in these products summarizes current knowledge about the prevention and treatment of clinical conditions but does not make recommendations. The Website states, “We supply the evidence, you make the decisions”; in other words, information is provided to enable clinicians to make informed decisions about which treatments to use. It is intended that clinicians will use this product to aid in decision making, but its purpose is not to replace other sources of information such as history, physical examination, availability of treatments, and local expertise. Clinical Evidence is intended for use by medical professionals, from students to practicing clinicians.

Clinical questions commonly encountered in primary and hospital care, as well as national priorities for health care in both the United Kingdom and the United States of America, are identified, and thorough searches for published systematic reviews and randomized controlled trials are conducted using MEDLINE, EMBASE, the Cochrane Library, and other electronic databases as appropriate. The results of the searches are independently assessed by two BMJ knowledge information (KI) specialists who use predetermined criteria to ensure consistency in selection of relevant studies. Contributors who are subject matter experts review the selections of the KI specialists, add or exclude sources, and provide justification for their decisions. The contributors summarize the evidence related to the question.
The information is then peer reviewed by at least two external expert clinicians. The resulting text is edited by editors with clinical and epidemiological training, and the data are checked against the original study reports. The section advisors and editorial board are clinicians from many different countries. More than 500 peer reviewers and 500 authors regularly contribute to CE.

Every twelve months, the literature is searched for each topic and the topic is updated with new findings. The print products are published every six months, though, in November 2006, publication of the CE Full Print will cease. The Web version is updated monthly with new content.

More than 500 clinical questions and 225 topics of clinical interest, varying from acne vulgaris to warts, are covered in the database, and contributors are being solicited for approximately 40 additional topics. The primary focus of the discussion for each topic is identifying interventions and determining the effectiveness of each. The topic presentation begins with a summary page that presents the questions addressed, Key Messages, and a list of the interventions categorized by effectiveness. The categories of effectiveness, adapted from a product developed by the Cochrane Collaboration, are Beneficial, Likely to be Beneficial, Trade off Between Benefits and Harms, Unknown Effectiveness, Unlikely to Be Beneficial, and Likely to Be Ineffective or Harmful. The Key Messages summarize the findings for each intervention. Other sections include: Definition, Incidence/Prevalence, Aetiology/Risk Factors, Prognosis, Aims of Intervention, Outcomes, and Methods. The Website states that “Clinical Evidence focuses on outcomes that matter to patients, meaning those that patients themselves are aware of, such as symptom severity, quality of life, survival, disability, walking distance, and live birth rate.” The Methods section details the process of selecting and compiling the material and the date the search and appraisal were performed. The benefits and harms of interventions identified in response to each question are then discussed in varying detail, and summarizing comments are included.

Drug names given in the database are the recommended or proposed international name when possible, and generic or proprietary names are used rather than brand names. If an international name for a drug is not available, the most common name is used. Numerical data included in a topic are presented in the same form as the original studies. Substantive changes since the last update are listed at the end of the topic. Some topics are not included in the print version and only appear on the Website. Each topic is followed by a list of references, with links to the full text in PubMed or the Cochrane Library, if available. The author of the topic is identified with affiliation and a declaration of competing interests.

The user can register for an alerting service to be notified by email about new topics, updates, or corrections. Access to the full content of CE Online includes tools and evidence-based medicine resources (EBM) not available in the other versions. These include a glossary, a guide to drug names, methods for estimating cardiovascular disease risk, training modules on EBM, and modules on statistics and methods of determining a good diagnostic test.

Access

The user has several options for access to Clinical Evidence. A yearly subscription to the entire online database, including Web only topics, is available. Other options for accessing the online content include a Season Ticket, which gives unlimited access to the content for thirty days or forty-eight-hour pay-per-view access to an individual topic. The cost for the pay-per-view option varies according to the size of the topic. A Palm OS and Pocket PC version of the CE Concise monograph is available as well. CE Concise, the print option, includes two print issues and, for standard, student, and nurse subscriptions, unlimited access to the Website for one year. Institutions may purchase an online site license based on the number of relevant full-time equivalent employees (FTEEs). CE is available in German, Hungarian, Italian, Russian, Spanish, and Portuguese as well as English. A two-week free trial gives the user unlimited access to the topic, “Malaria: Prevention in Travelers.”

The database is relatively easy to use. The list of clinical specialties can be used to locate information on a particular topic. Within a topic, the user can click on an intervention title for detailed information on that treatment or on a link for the Key Messages, information about the condition and references, as well as responses to the content on the site. In the reference listing, clicking on the link takes the user to the abstract of the reference in PubMed or Cochrane. A search engine allows the user to search the site if the needed information cannot be found using the specialty listing. The results are ranked by relevance, and the search term is highlighted. Print buttons on each page make it easy to print the page as it appears on the screen or the full text of the complete topic in portable document format (PDF).

With the online version of this product, the user has access to the information at the point of care, and some Web content that is not available in the print version. The PDA version only gives access to material available in the print version.

The content of the electronic version is updated monthly to incorporate new information or to correct errors, and changes are clearly identified.

Clinical Evidence differs from products such as Up to Date and the Cochrane Library in its approach to answering questions. Clinical Evidence identifies clinical questions and then looks for evidence addressing those questions, rather than providing a comprehensive discussion of the topic. Unlike clinical guidelines, Clinical Evidence does not make recommen-
Electronic resources reviews

Evidence Matters. Evidence Matters, 78 St-Joseph West #209, Montreal, QC, H2T 2P4, Canada; 866.843.0756; ContactUs@EvidenceMatters.com; http://www.evidencematters.com; institutional subscriptions only, contact for pricing.

Purpose

“When it comes to health—Evidence Matters!” This is a statement heartily endorsed by Evidence Matters Chief Executive Officer and Cofounder Ofer Allan Avital. The general purpose of the Website is to provide quick and easy access to medical evidence extracted from peer-reviewed research articles, allowing the clinician to choose the best treatment options for a patient with a confirmed diagnosis.

General description

Evidence Matters has been described as a “new generation online database” [1], meaning there has been a progression from manually searching indexes (such as Index Medicus) to searching the next generation of electronic (linear) bibliographic databases (such as MEDLINE and CINAHL). The electronic databases allow the user to search by keyword and retrieve a list of references and, in some cases, the full text; however, the clinician must then sort through the articles, read the pertinent ones, critically evaluate them, and apply the results or answers to their patients.

The third-generation database, Evidence Matters, is a clinical knowledge management system that uses a simple “ask-a-question” interface to retrieve the latest peer-reviewed research. The results or answers from the articles are synthesized into article summaries, tables, and graphs with links to the original references. The database provides users with the answers first and references second, focusing on the effectiveness, safety, and costs of therapy options and utilizing an evidence-based approach to searching the medical literature.

At present, subscribers to this database are institutions; although there are plans to offer a pricing model for individual subscribers in the future. Institutions may choose access based on a fixed number of concurrent users, or they may select the unlimited access option. Subscriptions are on an annual basis, and institutions may register for increased functionality, so prices can vary.

Content

Information included on the Evidence Matters Website is available in English and French. Currently, the Evidence Matters database has three main modules, covering twenty major diseases. Six modules are scheduled to be added to the database in 2006. The existing modules are:

- Cardiology
- Endocrinology
- Oncology
- Diseases are chosen based on the following criteria:
  - search requests
  - burden of illness to society
  - volume of research turnover

An example of high-volume research turnover is the oncology module that includes types of cancer involved in more than 90% of cancer care incidents. The main cancers currently included are: breast cancer, cervical cancer, lung cancer, colon cancer, and prostate cancer, with new diseases being added every few months.

Whenever possible, Evidence Matters links the user from the search results and article summaries to the full-text version of resources. During 2006, the availability of full text should increase due to a distribution agreement between Evidence Matters and ProQuest that will provide access to all full-text resources available in ProQuest products.

Intended audience

The intended audience for Evidence Matters includes clinicians as well as librarians, teachers, researchers, students, and patients. The “ask-a-question” interface is designed with the end user in mind. It can be more intuitive for the average user than the Boolean queries required when searching many other databases.

In this era of the “empowered” patient, search tools that assist the user with accessing reliable health information are in demand. Evidence Matters does an excellent job of translating complex scientific evidence into standardized templates that present the results in a consistent way regardless of the length or complexity of the original articles. Nevertheless, patients should seek guidance from clinicians when interpreting search results—just as they would when interpreting results from searching any other medical database.

Major features

- The PICO model: A main feature of this database is its “ask-a-question” interface that employs the patient, intervention, comparison, and outcome (PICO) model for formulating a clearly focused clinical question. The user may apply advanced filters as well, such as: timing of outcome measurement, sex, race, age range, and blinding characteristics. The advanced filters are context sensitive, so when the user creates a new clinical question, the advanced filters change accordingly.
- Information sources and quality: To obtain new articles for Evidence Matters, electronic database searches are conducted daily or several times weekly for each disease area, with the data coming primarily from research appearing in peer-reviewed scientific journals. Over 12,000 journals are scanned via databases such as MEDLINE, CINAHL, and Cochrane. Articles are selected that deal with therapeutic effectiveness, safety, and costs. To date, approximately 400 journals are included in the Evidence Matters database, signifying...
that articles in this subset of journals satisfy the abstractors’ search criteria. The listing of journals is an ever-expanding, “open list” because new journal titles are added as the abstractors locate relevant articles. References go as far back as 1970, with a 5-year span of coverage being the minimum for most journals.

**Search protocol:** Searches are conducted daily in databases such as MEDLINE, CINAHL, and Cochrane, with search terms including the appropriate names and synonyms for disease areas. Abstractors also perform manual searches of disease-specific resources. Studies are retained that describe trials of interventions on humans, and all study designs are accepted, from randomized controlled trials to case reports.

**Data extraction and review:** Most of the Evidence Matters reviewers have medical degrees, and some have masters’ degrees in library science. Information extracted from articles undergoes a three-tiered review process. First, specially trained reviewers conduct an initial data extraction and review, and a second blind review of the generated article summaries is performed by staff editors. A third review is done by any user who thinks there might be a discrepancy or error in any statistic or article summary. The user who notices a discrepancy can contact the Evidence Matters staff from the related Web page. If there are no further corrections after a six-month period, the article in question is marked as having been viewed for that period of time with no corrections.

**Summary of features**

- Simple “ask-a-question” template allows the user to build a clearly focused clinical question. 
- Search results are displayed clearly in article summaries, tables, and graphics with links to original references. 
- Thousands of scientific research articles from authoritative sources have been indexed by clinicians and medical librarians. 
- Advanced search filters are available: sex, age, ethnicity, etc. 
- Information has been pre-abstracted by trained professionals and linked to a search. 
- Statistics and outcomes are standardized, using the same type of statistic to evaluate similar clinical outcomes. 
- Disease areas are updated on a regular basis.

**Usability**

According to Avital, the usability of the Evidence Matters Website has been tested through focus groups and questionnaires. The ask-a-question format makes it easy for the user to build a clinical question, and the Website provides an animated demo to guide the user through the process of using the Evidence Matters database [2].

**Advantages**

Evidence Matters is accessible via the Website, and a personal digital assistant (PDA) version is under development. The main advantage of this product is its user-friendly, ask-a-question interface. The “Question Wizard” makes it possible for even a beginner or patient to build a clearly focused question. Of course, a patient should seek the guidance of a clinician for assistance with the interpreting the search results.

**Disadvantages**

The strength of Evidence Matters is its ability to simplify a large body of research in a therapeutic area. Its weakness, however, is that it does not cover rare diseases about which a small number of studies may have been published. A second weakness of the database is its limited number of modules. There are plans, however, to add the following modules in the near future: neurology, respiratory disorders, gastroenterology, nephrology, orthopedics, gynecology, and pediatrics.

**Similar products**

Evidence Matters is comparable to Google Scholar, PubMed, Cochrane, and UpToDate, as shown in Table 1.

**Future plans**

Future plans include the implementation of additional modules, filters, and other search features—an ambitious, labor-intensive, and costly undertaking. If these plans come to fruition, then Evidence Matters will become an even more valuable resource for the busy clinician who wants to practice evidence-based medicine in the most efficient and effective manner possible.
**Conclusion**

Evidence Matters offers some unique features that go far beyond providing a list of references. It synthesizes the data in a meaningful way, customizes the content, and gives the user the power to choose safe, effective therapies based on outcomes. The context-sensitive filters provide enhancements that make Evidence Matters the ultimate tool for the optimum search. The potential of this valuable search tool will be more fully realized as modules, with their accompanying disease areas, are added to the database.

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**References**
