McKesson Clinical Evidence Classification

References cited in the clinical content are classified according to the type of evidence presented. The class ratings, I through V, are intended to provide a classification of the evidence but are not necessarily hierarchical. Classifications appear in parentheses at the end of each reference. References followed by an (NC) are not classified; examples include pre-published research or information from government, manufacturer, laboratory, or patient education websites.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Type of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Meta-analysis or systematic review</td>
</tr>
<tr>
<td>Class II</td>
<td>Well-designed controlled clinical trial or experimental study</td>
</tr>
<tr>
<td>Class III</td>
<td>Well-designed observational or epidemiologic study</td>
</tr>
<tr>
<td>Class IV</td>
<td>Evidence-based guideline</td>
</tr>
<tr>
<td>Class V</td>
<td>Expert opinion, panel consensus, literature review, text or reference book, descriptive study, case report, or case series</td>
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</tbody>
</table>

Class I

A meta-analysis is an analysis of the results from multiple trials. A systematic review is a qualitative means of summarizing multiple trials on the same intervention. Class I studies can show a statistically significant difference in support of an intervention when smaller studies could not. A meta-analysis or systematic review that finds insufficient evidence to support or refute an intervention (due to a lack of properly designed trials) is inconclusive. A potential weakness of Class I studies is that they may only assess published studies. Since studies demonstrating significant differences are more likely to be published than those that do not, publication bias is of concern.

Class II

A randomized controlled trial (RCT) is an experimental study design in which subjects are randomly assigned to an intervention or a control group. An RCT is the gold standard for testing cause and effect relationships. Intention-to-treat analysis should be performed to account for missing data points.

Class III

Observational or epidemiologic studies can suggest an association between events or findings. These associations cannot be used to establish causality. Cross-sectional, cohort, and case-control studies are all used to identify possible risk factors. Cross-sectional studies are also used to determine the prevalence of a condition. Cohort studies are used to study incidence, the natural history of a condition, prognosis after a specific exposure, and associated harms. Nonrandomized controlled trials are sometimes used when randomization is impossible or unethical.

Class IV

Evidence-based guidelines are systematically developed recommendations for clinical practice. Evidence-based guidelines identify the methodology used to gather the evidence on which the recommendations are based. Usually, a grading system for both the quality of the evidence and the strength of the recommendations is provided. Guidelines that are evidence-based may also contain consensus recommendations in areas where evidence is lacking, but these recommendations are clearly identified and appropriately graded.

Class V

Class V references may be the best information in the absence of other evidence. Expert opinion, panel consensus, literature reviews, and descriptive studies (case reports or case series) are subject to significant bias. A case series with comparison to historical controls can be plagued with missing data, and data extraction inconsistencies are common. The use of historical controls does not address how the diagnosis of disease or its treatment has evolved over time with newer technologies or medication. Text book information may be out of date by the time the book is
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Comparative Effectiveness Research (CER)
"Comparative effectiveness research is the conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in 'real world' settings." (U.S. Department of Health and Human Services, Report to the President and the Congress on Comparative Effectiveness Research; 2009. Available from: http://www.hhs.gov/recovery/programs/cer/execsummary.html [cited Apr 20 2010])

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Dalen JE. Pulmonary embolism: what have we learned since Virchow? Natural history, pathophysiology, and diagnosis. Chest 2002; 122(4):1440-1456. (V)


Guidelines for the investigation of contacts of persons with infectious tuberculosis. Recommendations from the National Tuberculosis Controllers Association and CDC. MMWR Recomm Rep 2005. 54(RR-15):1-47. (IV)


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Rovner, Marc S., MD and James K. Stoller, MD. "Therapy for Alpha 1-Antitrypsin Deficiency: Rationale and Strategic Approach." Clinical Pulmonary Medicine, 1994, 1(3): 135-143.


Targeted tuberculin testing and treatment of latent tuberculosis infection. This official statement of the American Thoracic Society was adopted by the ATS Board of Directors, July 1999. This is a Joint Statement of the American Thoracic Society (ATS) and the Centers for Disease Control and Prevention (CDC). This statement was endorsed by the Council of the Infectious Diseases Society of America. (IDSA), September 1999, and the sections of this statement. Am J Respir Crit Care Med 2000. 161(4 Pt 2):S221-247. (IV)


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