Sometimes it helps to say the same thing in different ways. This is particularly true when offering definitions or descriptions of what a systematic review is. Consider the following definitions:

"Systematic reviews exhaustively search for, identify, and summarize the available evidence that addresses a focused clinical question, with particular attention to methodological quality. ... Clinicians can then apply these results to the wide array of patients who do not differ importantly from those enrolled in the summarized studies. Systematic reviews can also inform investigators about the frontier of current research. Thus, both clinicians and researchers should be able to reliably and quickly find valid systematic reviews of the literature." (BMJ. 2005 January 8; 330(7482): 68-73)


"Systematic reviews are scientific investigations in themselves, with pre-planned methods and an assembly of original studies as their “subjects.” They synthesize the results of multiple primary investigations by using strategies that limit bias and random error. These strategies include a comprehensive search of all potentially relevant articles and the use of explicit, reproducible criteria in the selection of articles for review. Primary research designs and study characteristics are appraised, data are synthesized, and results are interpreted.

When the results of primary studies are summarized but not statistically combined, the review may be called a qualitative systematic review. A quantitative systematic review, or meta-analysis, is a systematic review that uses statistical methods to combine the results of two or more studies. The term “overview” is sometimes used to denote a systematic review, whether quantitative or qualitative. Summaries of research that lack explicit descriptions of systematic methods are often called narrative reviews.

Review articles are one type of integrative publication; practice guidelines, economic evaluations, and clinical decision analyses are others. These other types of integrative articles often incorporate the results of systematic reviews. For example, practice guidelines are systematically developed statements intended to assist practitioners and patients with decisions about appropriate health care for specific clinical circumstances. Evidence-based practice guidelines are based on systematic reviews of the literature,
appropriately adapted to local circumstances and values. Economic evaluations compare both the costs and the consequences of different courses of action; the knowledge of consequences that are considered in these evaluations is often generated by systematic reviews of primary studies. Decision analyses quantify both the likelihood and the valuation of the expected outcomes associated with competing alternatives."

To simplify (well, not really), a Systematic Review is a rigorous review of a specific clinical question. It is "systematic" because it summarizes original research following a scientific plan decided in advance and made explicit at every step. The reader can see the strength of evidence at every step and, in principle, check validity for himself. Sometimes it is possible to combine studies to give a more precise estimate of effect size (meta-analysis).

Systematic reviews are especially useful in addressing a single focused question. For the researcher, a systematic review should have strong studies available - but not so much in agreement with one another that the question is already settled. Conversely, there should not be so few studies that you could just as well critique each study individually. To emphasize again, the systematic review is subject to the same vigor needed for any observational or experimental study to avoid bias.

Systematic Reviews & Evidence-based Practice

Systematic reviews grew out of the evidence-based medicine (EBM) movement. To fully understand why the conclusions of systematic reviews carry more weight than other types of reviews and articles, a little background in evidence-based practice (EBP) would help. You can look up the definition of EBM online; however, for our purposes, a simple definition of EBP is "Evidence-based practice is based on evaluation research that highlights interventions that have been found to be effective."

Of all of the review types, Systematic Reviews are the most stringent in process, in its literature review and publication standards. A systematic review may also include a meta analysis. A Meta Analysis is the quantitative analysis of two or more independent studies to integrate and synthesize the findings and describe the features of the studies that contribute to variation in their results.

If, after reviewing the literature, the information does not lend itself to a meta analysis, then you might do an Integrative Review of Research or IRR.

The following chart provides a brief comparison of the three major types of scientific reviews.
<table>
<thead>
<tr>
<th></th>
<th>Systematic Review</th>
<th>Meta-analysis</th>
<th>IRR</th>
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</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>“...research article that identifies relevant studies, appraises their quality and summarizes their results using scientific methodology.” (Khan, 2003)</td>
<td>“...a mathematical synthesis of the results....” (Greenhalgh, 1997)</td>
<td>“...a narrative account of information that is already currently available...” (Jesson &amp; Lacey, 2006)</td>
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<tr>
<td><strong>Method of Analysis</strong></td>
<td>Data is abstracted in a standardized format. (Center for Outcomes Research and Education)</td>
<td>Statistical equations are used to synthesize data.</td>
<td>Narrative is used to discuss implications of findings in the current literature.</td>
</tr>
<tr>
<td><strong>Searching Technique</strong></td>
<td>Expert and reproducible search techniques applied to databases, print journals and indexes, current studies, experts, and grey literature.</td>
<td>Expert and reproducible search techniques applied to databases, print journals and indexes, current studies, experts, and grey literature.</td>
<td>Expert search techniques applied to applicable databases and search engines.</td>
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</tbody>
</table>

There are sections of this guide on all three of the topics compared in the chart.