

Levels of evidence for primary research question*

(This chart was adapted from material published by the Centre for Evidence-Based Medicine, Oxford, UK.

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Level	Therapeutic studies - investigating the results of treatment	Prognostic studies - investigating the effect of a patient characteristic on the outcome of disease	Diagnostic studies - investigating a diagnostic test	Economic and decision analyses - developing an economic or decision model
I	High quality randomized trial with statistically significant difference or o statistically significant difference but narrow confidence intervals	High quality prospective studyd (all patients were enrolled at the same point in their disease with >80% of enrolled patients)	Testing of previously developed diagnostic criteria on consecutive patients (with universally applied reference "gold" standard)	Sensible costs and alternatives; values obtained from many studies; with multiway sensitivity analyses
	Systematic review ^b of level RCTs (and study results were homogenous ^c)	Systematic review ^b of level I studies	Systematic review ^b of level I studies	Systematic review ^b of level I studies
II	Lesser quality RCT (eg. <80% follow-up, no blinding, or improper randomization)	Retrospective study ^f	Development of diagnostic criteria on consecutive patients (with universally applied reference "gold" standard)	Sensible costs and alternatives; values obtained from limited studies; with multiway sensitivity analyses
	Prospective ^d comparative study ^e	Untreated controls from an RCT	Systematic review ^b of level II studies	Systematic review ^b of level II studies
	Systematic review ^b of level II studies or level I studies with inconsistent results	Lesser quality prospective study (eg, patients enrolled at different points in their disease or <80% follow-up)		
		Systematic review ^b of level II studies		
III	Case control study ^g	Case control study ^g	Study of non consecutive patients; without consistently applied reference "gold" standard	Analyses based on limited alternatives and costs; and poor estimates
	Retrospective ^f comparative study ^e		Systematic review ^b of level III studies	Systematic review ^b of level III studies
	Systematic review ^b of level III studies		Case control study	
			Poor reference standard	
IV	Case series ^h	Case series		Analyses with no sensitivity analyses
V	Expert opinion	Expert opinion	Expert opinion	Expert opinion

^a A complete assessment of quality of individual studies requires critical appraisal of all aspects of the study design; ^b A combination of results from two or more prior studies; ^c Studies provided consistent results; ^d Study was started before the first patient enrolled; ^e Patients treated one way (eg, cemented hip arthroplasty) compared with a group of patients treated in another way (eg, uncemented hip arthroplasty) at the same institution; ^f The study was started after the first patient enrolled; ^g Patients identified for the study based on their outcome, called "cases" eg, failed total arthroplasty are compared with patients who did not have outcome, called "controls" eg, successful total hip arthroplasty; ^h Patients treated one way with no comparison group of patients treated in another way.