Supplemental digital content for Cook DA, Brydges R, Zendejas B, Hamstra SJ, Hatala R. Mastery learning for health professionals using technology-enhanced simulation: A systematic review and meta-analysis. Acad Med. 2013;88(8).

Supplemental Digital Table 1

Key Features of Studies of Mastery Learning for Health Professionals Using Technology-Enhanced Simulation *

Author (year), citation	Topic	Participant N; training *	Study design [†]	Comparison cluster [‡]	Instructional features [§]	Outcomes reported [¶]	Obj.[ǁ]	Blind**	Follow-up [††]	MERSQI [‡‡]	NOS[§§]
Salvendy G (1980)[23]	Open surgery/suturing	36; MS	RCT	OE SS: SM, FB		ST, SPc	1	1	1	13.5	4
Stewart RD (1984)[24]	Intubation	122; EMT	2NR	SS: MM	CI	P	1	0	1	12	4
Feil PH (1989)[55]	Dentistry	78; D	2NR	NI	CI, FB, Time	SPd	1	1	0	12	3
Stratton SJ (1991)[25]	Intubation	125; EMT	RCT	SS: MM	CI, FB, Reps	P	0	0	1	11	3
Ashurst N (1996)[56]	Intubation	49; MD, RN	1PP	NI		SPc	1	0	0	11	0
Limpaphayom K (1997)[20]	Obstetrics	300; O	2NR	OE Cost	CI, Time	R, K, BP, P	1	1	1	14	4
Kovacs G (2000)[32]	Intubation	84; MS, D, O	RCT	SS: EP	CI, FB, Reps, Time	SPc	1	1	1	14.5	5
Naik VN (2001)[21]	Intubation	24; PG	RCT	OE	CI	BT, BP, P	1	1	1	16	4
Ferlitsch A (2002)[57]	Endoscopy	13; MS	RCT	NI	CI, Time	ST, SPc	1	1	0	12.5	3
Hamilton EC (2002)[41]	Min. invasive surg.	50; PG	RCT	SS: SM	CI, Reps, Time	R, ST, SPc, BP	1	1	1	14	5
Seymour NE (2002)[58]	Min. invasive surg.	16; PG	RCT	NI	CI, FB, Time	BT, BP	1	1	0	14	3
Neumann M (2003)[59]	Endoscopy	25; MS, PG, MD	1PP	NI	CI, FB, Time	SPc	1	0	0	12	0
Jacomides L (2004)[60]	Endoscopy	32; MS, PG	2NR	NI	CI, Time	ST	1	1	1	12.5	2
Mayo PH (2004)[61]	Anesthesia, Resuscitation (BLS, ACLS, ATLS)	50; PG	RCT	NI	CI, FB	SPc	1	0	1	12.5	5
Ahlberg G (2005)[62]	Endoscopy	12; PG	RCT	NI	CI, FB, Time	BT, P	1	1	0	15	4
Korndorffer JR, Jr. (2005)[63]	Min. invasive surg.	20; MS	RCT	NI	CI, Reps	ST, SPc	1	1	1	13.5	5
Korndorffer JR, Jr. (2005)[64]	Min. invasive surg.	17; PG	RCT	NI	CI, FB, Reps	ST, SPc	1	1	0	12.5	4
Stefanidis D (2005)[65]	Min. invasive surg.	14; PG	1PP	NI		SPc	1	1	1	12	2
Tanoue K (2005)[22]	Min. invasive surg.	35; MS	RCT	OE	CI	ST, SPc	1	1	1	12.5	4
Uchal M (2005)[47]	Min. invasive surg.	17; PG	RCT	SS: Other	Time	SPc	1	1	1	15.5	6
Andreatta PB (2006)[66]	Min. invasive surg.	21; PG	RCT	NI	CI, Reps	ST, SPc	1	1	1	13.5	5

Author (year), citation	Topic	Participant N; training *	Study design †	Comparison cluster ‡	Instructional features §	Outcomes reported ¶	Obj.[l]	Blind**	Follow-up ††	MERSQI ‡‡	NOS§§
Rosenthal ME (2006)[45]	Resuscitation (BLS, ACLS, ATLS)	49; PG	RCT	SS: Other	CI, FB	SPc	1	0	1	12.5	4
Scerbo MW (2006)[43]	Venous access	20; MS	RCT	SS: SM	FB	SPc	1	0	1	12.5	3
Stefanidis D (2006)[67]	Min. invasive surg.	18; PG, MD	1PP	NI	CI, Reps	ST, SPc, SPd	1	0	1	12	1
Stefanidis D (2006)[33]	Min. invasive surg.	18; MS	RCT	SS: EP	CI, FB, Reps, Time	SPc	1	0	0	11.5	3
Stefanidis D (2006)[68]	Min. invasive surg.	20; PG	1PP	NI	CI, Reps, Time	ST, SPc	1	1	1	11	2
Wayne DB (2006)[69]	Resuscitation (BLS, ACLS, ATLS)	41; PG	1PP	NI	CI, FB, Time	SPc	1	0	1	13	2
Aggarwal R (2007)[70]	Min. invasive surg.	20; PG	RCT	NI	CI, Reps	ST, SPc	1	1	1	15.5	5
Ahlberg G (2007)[71]	Min. invasive surg.	13; PG	RCT	NI	CI, FB, Reps, Time	BT, BP, P	1	1	1	17	5
Cosman PH (2007)[72]	Min. invasive surg.	10; PG	RCT	NI		BT, BP	1	1	0	14	3
Ganai S (2007)[73]	Min. invasive surg.	20; MS	RCT	NI	CI, Reps	ST, SPc	1	0	1	12.5	4
Kory PD (2007)[74]	Resuscitation (BLS, ACLS, ATLS)	62; PG	2NR	NI	CI, FB	SPc	1	0	1	11.5	2
Scott DJ (2007)[75]	Open surgery/suturing	4; PG	1PP	NI	Reps, Time	SPc	0	0	1	10	1
Stefanidis D (2007)[46]	Min. invasive surg.	32; MS	RCT	NI SS: Other	CI, Reps, Time	SPc	1	0	1	12.5	4
Stefanidis D (2007)[39]	Min. invasive surg.	34; MS	2NR	SS: FB	CI, FB, Reps	SPc	1	0	1	11.5	1
Yi SY (2007)[76]	Endoscopy	9; PG	1PP	NI	Reps	ST, SPc	1	1	0	10	1
Goova MT (2008)[77]	Open surgery/suturing	37; PG	1PP	NI	CI, Reps, Time	SPc	1	0	1	13	2
Lammers RL (2008)[29]	Epistaxis management	28; PG	RCT	SS: EP	CI, FB	ST, SPc	1	1	1	14.5	5
Scott DJ (2008)[78]	Min. invasive surg.	21; MS	1PP	NI	CI, FB, Reps, Time	SPc	1	0	1	12.5	1
Smith KK (2008)[79]	Resuscitation (BLS, ACLS, ATLS)	104; RN	1PP	NI	CI	SPc	1	0	0	11	0
Stefanidis D (2008)[80]	Min. invasive surg.	15; MS	RCT	NI	CI, FB, Reps, Time	SPc	1	0	1	14.5	3
Van Sickle KR (2008)[81]	Min. invasive surg.	24; PG	RCT	NI	CI, FB	BT, BP	1	1	1	15	4
Wayne DB (2008)[82]	Percutaneous proc.	40; PG	1PP	NI	CI, FB	K, SPc	1	1	1	13	3
Yi SY (2008)[83]	Endoscopy	11; PG	2NR	NI	CI, Reps, Time	BT, BP, P	0	0	1	10	2
Barsuk JH (2009)[84]	Venous access	18; PG	2NR	NI	CI, FB	SPc	1	0	1	15.5	3
Barsuk JH (2009)[85]	Venous access	103; PG	2NR	NI	CI	BP, P	0	0	1	10	3
Barsuk JH (2009)[86]	Venous access	92; PG	2NR	NI	CI, FB	P	1	0	0	13	2
Barsuk JH (2009)[87]	Venous access	41; PG	2NR	NI	CI, FB	SPc, BP, P	1	1	1	15	4
Britt RC (2009)[88]	Venous access	34; PG	RCT	NI		BP, P	1	0	0	13	3

Author (year), citation	Topic	Participant N; training *	Study design †	Comparison cluster ‡	Instructional features §	Outcomes reported ¶	Obj.|	Blind**	Follow-up ††	MERSQI ‡‡	NOS§§
Castellvi AO (2009)[89]	Min. invasive surg.	44; PG	1PP	NI		SPc	1	0	1	12	2
Domuracki KJ (2009)[26]	Intubation	101; MS, RN	RCT	SS: MM, FB		SPc	1	1	1	13.5	5
Duncan DR (2009)[90]	Percutaneous proc.	5; MD	1PP	NI	CI, FB	P	1	0	0	12.5	0
Essani R (2009)[91]	Min. invasive surg.	8; PG	1PP	NI	CI, FB	ST, SPc	1	1	1	14	2
Feudner EM (2009)[92]	Microsurgery/Ophthalmology	63; MS, PG	2NR	NI	CI, Reps	SPc	1	1	1	13.5	3
Hoadley TA (2009)[42]	Resuscitation (BLS, ACLS, ATLS)	53; MD, RN, EMT, O	RCT	SS: SM	CI, FB, Time	R, K, SPc	1	0	0	14	2
Hogle NJ (2009)[93]	Min. invasive surg.	13; PG	RCT	NI		BP	1	1	1	15	4
Larsen CR (2009)[94]	Min. invasive surg.	24; PG	RCT	NI	Time	BT, BP	1	1	1	17	6
Lubin J (2009)[95]	Intubation	17; RN, EMT	1PP	NI	Reps, Time	P	1	0	0	12.5	0
McDougall EM (2009)[35]	Min. invasive surg.	20; MS	RCT	SS: SM Cost	CI, FB	R, ST, SPc	1	1	1	15.5	4
Naylor RA (2009)[96]	Open surgery/suturing, Natural orifice proc., Physical exam	204; MS	1PP	NI	CI	SPc	1	0	1	12	2
Pauly-O'Neill S (2009)[97]	med administration	39; RN	1PP	NI		SPc	1	0	0	8	0
Rosenthal ME (2009)[30]	Min. invasive surg.	20; MS	2NR	SS: EP Cost	Reps, Time	ST, SPc	1	0	1	11.5	1
Stefanidis D (2009)[98]	Min. invasive surg.	11; MS, PG	1PP	NI	Reps	ST, SPc	1	1	1	13	2
Yi SY (2009)[99]	Endoscopy	9; PG	1PP	NI	CI, Reps	ST, SPc	1	1	0	10	1
Brydges R (2010)[28]	Venous access	60; RN	RCT	SS: MM, SR	Reps	SPc	1	1	1	14.5	5
Butter J (2010)[100]	Physical exam	108; MS	2NR	NI	CI, Reps	K, SPc	1	1	1	13.5	3
Evans LV (2010)[101]	Venous access	188; PG	RCT	NI	CI, FB, Reps	SPc, BP, P	1	1	1	15	5
Fried MP (2010)[102]	Min. invasive surg.	28; PG	RCT	NI		BT, BP	1	1	1	16	5
Gauger PG (2010)[27]	Min. invasive surg.	14; PG	RCT	SS: MM, SR	Reps, Time	SPc, BP	1	1	0	13	3
Kallstrom R (2010)[103]	Endoscopy	24; PG	1PP	NI	CI, Reps, Time	BT, BP, P	1	1	0	13	1
Molinas CR (2010)[48]	Min. invasive surg.	60; PG, MD	RCT	NI SS: Other	Reps	SPc	1	1	0	11.5	3
Rosenthal ME (2010)[104]	Min. invasive surg.	21; MS	1PP	NI	Reps	SPc	1	0	0	11	0
Sroka G (2010)[105]	Min. invasive surg.	17; PG	RCT	NI	CI, FB, Reps, Time	SPc, BP	1	1	1	16	5
Stefanidis D (2010)[31]	Min. invasive surg.	20; MS	RCT	SS: EP Cost	CI, FB, Reps, Time	ST, SPc	1	1	1	14.5	5

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Author (year), citation	Topic	Participant N; training *	Study design [†]	Comparison cluster [‡]	Instructional features [§]	Outcomes reported [¶]	Obj.[ǀ]	Blind**	Follow-up [††]	MERSQI [‡‡]	NOS[§§]
Stefanidis D (2010)[106]	Min. invasive surg.	15; PG	1PP	NI	CI, Reps, Time	SPc	0	0	0	6	0
Unalan PC (2010)[107]	Min. invasive surg.	64; PG, MD	1PP	NI	CI, FB, Reps, Time	SPc	0	0	1	10	2
Vankipuram M (2010)[108]	Open surgery/suturing	10; MS	2NR	NI		SPd	1	1	0	10.5	3
Arora S (2011)[34]	Min. invasive surg.	18; PG	RCT	SS: EP	CI	SPc	1	1	1	14.5	5
Maschuw K (2011)[109]	Min. invasive surg.	50; PG	RCT	NI	CI, Reps, Time	ST, SPc	1	1	1	12.5	5
Panait L (2011)[110]	Min. invasive surg.	23; PG	1PP	NI	CI	SPc	0	0	1	8	1
Snyder CW (2011)[37]	Min. invasive surg., Endoscopy	36; MS	RCT	SS: SR, FB	CI, FB, Time	ST	1	1	1	13.5	4
Thompson JR (2011)[44]	Min. invasive surg.	33; MS, O	RCT	NI SS: SM	CI, Reps, Time	ST, SPc	1	1	0	12	3

* Participants: MS = medical student; PG = postgraduate physician trainee (resident); MD = practicing physician; RN = practicing or student nurse; EMT = emergency medicine technician or other first responder; D = practicing or student dentist; O = other health professional.

[†]Study design: 1PP = 1 group pre-post study; 2NR = nonrandomized 2-group study; RCT = randomized 2-group study.

[‡]Comparison cluster: NI = no intervention; OE = other (non-simulation) instruction; SS = simulation-simulation comparison (further SS detail codes indicate section of manuscript where discussed: MM = mastery model vs non-mastery; EP = extra practice; SR = self-regulation; FB = feedback; SM = 2 simulation modalities).

[§]Instructional features: CI = cognitive interactivity high; FB = feedback high; Reps = many repetitions; Time = learning time≥5 hours.

[¶]Outcomes reported: R = Reaction (satisfaction), K = knowledge, ST = time skill, SPc = process skill, SPd = product skill, BT = time behavior, BP = process behavior, P = patient effects.

[ǀ]Obj. = objective assessment (1) or self-report (0).

**Blind = blinded assessment (1) or unblinded (0).

[††]Follow-up = follow-up high ≥75% (1) or low/not reported (0).

[‡‡]MERSQI = Medical Education Research Study Quality Instrument (maximum score 18).

[§§]NOS = modified Newcastle-Ottawa scale (maximum score 6).

Supplemental Digital Table 2

Subgroup Analyses of Studies Comparing Simulation-Based Mastery Learning with No Intervention *

Table 2.1. Subgroup Analyses for Outcome: Time Skill

Feature	Subgroup	No. studies (No. participants)	ES	95% confidence interval	$P_{interaction}$
All		15 (278)	0.94	0.64, 1.24	
No. groups, timing	2-group posttest-only	3 (52)	1.18	0.58, 1.79	
	2-group pre-post	6 (151)	0.76	0.3, 1.22	
	1-group pre-post	6 (75)	1.09	0.64, 1.54	
Group allocation	Randomized	8 (171)	0.68	0.36, 1.01	0.004
	Nonrandomized	1 (32)	1.62	1.07, 2.17	
Participants	Medical student	6 (109)	1.2	0.44, 1.95	
	Postgraduate trainees	11 (212)	1.03	0.71, 1.35	
	Practicing physicians	1 (18)	1.37	0.65, 2.08	
	Other	1 (14)	1.79	0.45, 3.12	
Cognitive interactivity	High	13 (258)	0.9	0.6, 1.2	0.52
	Low	2 (20)	1.59	-0.51, 3.69	
Feedback	High	2 (25)	0.98	0.43, 1.53	0.9
	Low	13 (253)	0.94	0.61, 1.27	
Repetitions	Many >10	12 (225)	0.81	0.51, 1.1	0.01
	Few ≤9	3 (53)	1.56	1.09, 2.03	
Time learning	≥5 hours	5 (129)	1.11	0.56, 1.67	0.64
	<5 hours	9 (130)	0.96	0.65, 1.27	
Assessment	Blinded	12 (221)	1.05	0.73, 1.37	0.28
	Not blinded	3 (57)	0.61	-0.13, 1.34	
NOS	High ≥4	6 (144)	0.56	0.26, 0.86	0.003
	Low <4	9 (134)	1.25	0.89, 1.6	
MERSQI	High ≥12	12 (240)	1.03	0.65, 1.4	0.36
	Low <12	3 (38)	0.77	0.36, 1.18	
Effect size estimation	Precise	13 (245)	0.94	0.6, 1.28	

Table 2.2. Subgroup Analyses for Outcome: Process Skill

Feature	Subgroup	No. studies (No. participants)	ES	95% confidence interval	$P_{interaction}$
All		41 (1523)	1.29	1.08, 1.5	
No. groups, timing	2-group posttest-only	8 (466)	1.04	0.58, 1.5	
	2-group pre-post	11 (320)	1.16	0.8, 1.53	
	1-group pre-post	22 (737)	1.45	1.16, 1.74	
Group allocation	Randomized	14 (495)	1.11	0.76, 1.46	0.99
	Nonrandomized	5 (291)	1.11	0.68, 1.54	
Participants	Medical student	13 (510)	1.45	1.06, 1.83	
	Postgraduate trainees	28 (959)	1.27	1.01, 1.53	
	Practicing physicians	5 (165)	1.1	0.6, 1.59	
	Nurses	3 (152)	1.3	0.71, 1.9	
	Other	2 (78)	0.7	0.03, 1.36	
Cognitive interactivity	High	32 (1340)	1.27	1.03, 1.5	0.90
	Low	8 (153)	1.3	0.83, 1.77	
Feedback	High	14 (603)	1.41	0.98, 1.84	0.31
	Low	25 (875)	1.16	0.93, 1.38	
Repetitions	Many >10	25 (825)	1.3	1, 1.6	0.87
	Few ≤9	15 (668)	1.27	1.02, 1.52	
Time learning	≥5 hours	14 (353)	1.49	1.04, 1.94	0.49
	<5 hours	19 (625)	1.31	1.06, 1.57	
Assessment	Blinded	16 (486)	1.04	0.74, 1.34	0.06
	Not blinded	25 (1037)	1.43	1.16, 1.69	
NOS	High ≥4	11 (454)	0.97	0.6, 1.33	0.05
	Low <4	30 (1069)	1.4	1.17, 1.63	
MERSQI	High ≥12	28 (1110)	1.36	1.1, 1.63	0.32
	Low <12	13 (413)	1.14	0.81, 1.48	
Effect size estimation	Precise	39 (1490)	1.3	1.09, 1.52	

Table 2.3. Subgroup Analyses for Outcome: Time Behavior

Feature	Subgroup	No. studies (No. participants)	ES	95% confidence interval	$P_{interaction}$
All		9 (154)	0.81	0.32, 1.3	
No. groups, timing	2-group posttest-only	8 (130)	1.01	0.64, 1.38	
	1-group pre-post	1 (24)	-0.05	-0.46, 0.37	
Group allocation	Yes	7 (119)	1.06	0.67, 1.45	0.41
	No	1 (11)	0.53	-0.68, 1.74	
Participants	Postgraduate trainees	9 (154)	0.81	0.32, 1.3	
Cognitive interactivity	High	6 (98)	0.49	0.01, 0.98	0.02
	Low	3 (56)	1.41	0.83, 2	
Feedback	High	4 (63)	0.79	0.27, 1.31	0.85
	Low	5 (91)	0.88	0.08, 1.68	
Repetitions	Many	3 (48)	0.39	-0.36, 1.13	0.13
	Few	6 (106)	1.05	0.62, 1.48	
Time learning	≥5 hours	6 (97)	0.61	0.01, 1.21	
Assessment	Blinded	8 (143)	0.85	0.31, 1.39	0.63
	Not blinded	1 (11)	0.53	-0.68, 1.74	
NOS	High ≥4	5 (93)	1.2	0.76, 1.65	0.005
	Low <4	4 (61)	0.25	-0.24, 0.74	
MERSQI	High ≥12	8 (143)	0.85	0.31, 1.39	0.63
	Low <12	1 (11)	0.53	-0.68, 1.74	
Effect size estimation	Precise	8 (133)	0.69	0.21, 1.16	

Table 2.4. Subgroup Analyses for Outcome: Process Behavior

Feature	Subgroup	No. studies (No. participants)	ES	95% confidence interval	$P_{interaction}$
All		14 (533)	0.94	0.6, 1.28	
No. groups, timing	2-group posttest-only	12 (493)	0.81	0.47, 1.15	
	2-group pre-post	1 (16)	2.25	1.24, 3.26	
	1-group pre-post	1 (24)	0.96	0.44, 1.47	
Group allocation	Randomized	10 (354)	1.09	0.56, 1.61	0.13
	Nonrandomized	3 (155)	0.59	0.24, 0.95	
Participants	Postgraduate trainees	14 (533)	0.94	0.6, 1.28	
Cognitive interactivity	High	9 (431)	0.95	0.53, 1.37	0.96
	Low	5 (102)	0.93	0.26, 1.6	
Feedback	High	6 (293)	1.14	0.45, 1.83	0.42
	Low	8 (240)	0.82	0.46, 1.18	
Repetitions	Many >10	5 (249)	1.11	0.36, 1.85	0.56
	Few ≤9	9 (284)	0.86	0.49, 1.22	
Time learning	≥5 hours	6 (101)	1.42	0.98, 1.86	0.003
	<5 hours	2 (144)	0.56	0.19, 0.93	
Assessment	Blinded	8 (135)	1.4	0.99, 1.81	0.0005
	Not blinded	6 (398)	0.5	0.21, 0.79	
NOS	High ≥4	8 (335)	1.06	0.5, 1.63	0.41
	Low <4	6 (198)	0.78	0.38, 1.17	
MERSQI	High ≥12	12 (419)	1.01	0.6, 1.42	0.12
	Low <12	2 (114)	0.54	0.12, 0.96	
Effect size estimation	Precise	11 (472)	0.82	0.45, 1.2	

Table 2.5. Subgroup Analyses for Outcome: Patient Effects

Feature	Subgroup	No. studies (No. participants)	ES	95% confidence interval	$P_{interaction}$
All		11 (537)	0.73	0.36, 1.1	
No. groups, timing	2-group posttest-only	8 (491)	0.69	0.3, 1.08	
	1-group pre-post	3 (46)	0.93	-0.34, 2.2	
Group allocation	Randomized	4 (244)	0.39	0.13, 0.64	0.16
	Nonrandomized	4 (247)	0.81	0.29, 1.34	
Participants	Postgraduate trainees	9 (515)	0.81	0.41, 1.2	
	Practicing physicians	1 (5)	1.18	-0.79, 3.14	
	Nurses	1 (17)	0.09	-0.42, 0.59	
	Other	1 (17)	0.09	-0.42, 0.59	
Cognitive interactivity	High	9 (486)	0.88	0.47, 1.29	0.02
	Low	2 (51)	0.16	-0.25, 0.57	
Feedback	High	6 (348)	0.77	0.21, 1.33	0.88
	Low	5 (189)	0.71	0.14, 1.27	
Repetitions	Many >10	5 (250)	0.73	0.13, 1.33	0.95
	Few ≤9	6 (287)	0.76	0.31, 1.21	
Time learning	≥5 hours	5 (77)	0.89	0.14, 1.64	0.93
	<5 hours	4 (241)	0.85	0.3, 1.4	
Assessment	Blinded	3 (210)	0.57	0.03, 1.1	0.60
	Not blinded	8 (327)	0.76	0.3, 1.21	
NOS	High ≥4	4 (251)	0.39	0.08, 0.7	0.11
	Low <4	7 (286)	0.85	0.37, 1.32	
MERSQI	High ≥12	9 (423)	0.73	0.28, 1.18	0.78
	Low <12	2 (114)	0.82	0.39, 1.24	
Effect size estimation	Precise	11 (537)	0.73	0.36, 1.1	

* The studies summarized in all parts of Table 2 compared simulation-based mastery learning with no intervention.

Subgroup analyses grouped studies according to the presence or absence of the specified feature, and compared the

mean effect size between these two groups. Analyses were performed separately for each outcome reported in≥ 5

studies. Instructional design subgroups (cognitive interactivity, feedback, repetitions, time learning) were determined by

the presence of this feature in the mastery learning group. MERSQI = Medical Education Research Study Quality

Instrument; NOS = modified Newcastle-Ottawa Scale.

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Supplemental Digital List 1

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* Reference 1-54 are listed in the text of the report. For key features of the 82 studies featured in this systematic review, see Supplemental Digital Table 1. For a general description of these same studies, see Table 1 in the report.