Supplemental Digital Content

Supplemental Digital Table 1

Definition of Terms Used in a 2012 Systematic Review of the Literature on Team Leadership Assessment Tools in Health Care Action Teams

Term	Definition
Participants	
Health professions learner	Any undergraduate, graduate, fellow, board-eligible or licensed practitioner in a health care field, including physicians, nurses, physician assistants, respiratory therapists, medical assistants, and pre-hospital providers.
Work team	Team consisting of two or more individuals who (1) share common goals, (2) are part of a larger organizational system, (3) are formed to execute organizational tasks, and (4) exhibit interdependencies with respect to workflow, goals, and outcomes.
Action team	Interdisciplinary work team whose members, improvise and coordinate their actions in time-pressured, unstable situations where the stakes are high (e.g., code team, surgical team, disaster management team).
Study design[a]	
Cross-sectional	A single group assessed without a preceding intervention or following an intervention but without a baseline/pre-intervention assessment.
Single-group pre-/posttest	A single group was assessed at least once both before and after an intervention.
Non-randomized comparison	Comparisons made between two or more non-randomized groups. Comparisons could be pre and post-intervention or post-intervention only.
Randomized comparison	Comparisons made between two or more randomized groups. Comparisons could be pre and post-intervention or post-intervention only.
Validity evidence[b]	
Content validity	Evaluation of the degree to which the instrument accurately and completely represents the construct being assessed.
Internal structure	Evaluation of (1) reliability (inter-rater agreement, internal consistency, temporal stability, parallel forms) and/or (2) factor analysis data of the instrument.
Relationship to other variables	Evaluation of the statistical association between the assessment tool and another measure of performance, or expected developmental/experiential pattern. Other variable should logically be expected to correlate to outcome assessed.
Participant characteristics	Experience level (e.g., level of training, prior educational experiences) or participant attributes (e.g., personality type).
Separate measure	Any assessment external to the target assessment tool or a sub-component of the same tool that clearly measures a different construct (e.g., a tool with both technical and non-technical skills). Includes tools assessing teamwork or clinical performance and non-tool based assessments such as patient care metrics.

Response process	Evaluation of the raters or participants interpretation of the assessment tool to determine whether the tool is being used as it was intended to be used (e.g., rater assessment).
Other	
Rater training	Report of rater instruction, rater practice with the provision of feedback, or the explicit mention of prior rater training or experience, *specific to the leadership assessment tool*.
Global rating scale [c]	Likert scale-based assessment tool providing an overall impression of either the entire construct (leadership) or individual items within a construct.
Direct observation	Any assessment that involves viewing either simulated or actual patient clinical encounters. Observations may be done real time at the bedside or using video recordings of clinical encounters.

[a] Fraenkel J, Wallen N. How to Design and Evaluate Research in Education. McGraw-Hill Companies, Incorporated; 2008.
[b] Cook DA, Beckman TJ. Current concepts in validity and reliability for psychometric instruments: Theory and application. Am J Med. 2006;119:166.e7-166.e16.
[c] Bould MD, Crabtree NA, Naik VN. Assessment of procedural skills in anaesthesia. Br J Anaesth. 2009;103:472-483.

Supplemental Digital Appendix 1

1. Full Search Strategy Used in a 2012 Systematic Review to Identify Research Describing Team Leadership Assessment Tools in Health Care Action Teams

PubMed search strategy:

("Leadership"[MH] OR leadership[tiab] OR teamwork[tiab] OR "effective teams"[tiab] OR "management course"[tiab] OR "team training"[tiab]) AND ("Quality of Health Care"[Mesh] OR "Outcome Assessment (Health Care)"[MH] OR assessment[tiab] OR assess[tiab] OR performance[tiab] OR evaluation[tiab] OR evaluate[tiab] OR evaluated[tiab] OR validity[tiab] OR validation[tiab] OR measure[tiab] OR measurement[tiab] OR "Program Evaluation"[mh] OR ("educational status"[MeSH Terms] OR "education"[MeSH Terms]) OR "education"[Subheading] OR "pilot study"[tiab] OR training[tiab] OR "leadership development"[tiab]) AND ("Health Personnel"[Mesh] OR "Faculty"[Mesh] OR "Emergency Responders"[Mesh] OR "Students, Health Occupations"[Mesh] OR residents[tiab] OR "Internship and Residency"[mh] OR "care teams"[tiab] OR "Patient Care Team"[mh] OR "Hospital Rapid Response Team"[mh] OR "Students, Medical"[mh]) AND English[lang] AND Journal Article[ptyp] NOT ("duty hours"[All Fields] OR executive[All Fields])

CINAHL search strategy:

S23	S21 Limiters - English Language; Research Article; Exclude MEDLINE records
S21	S18 and S19 and S20
S20	(S7 or S8 or S9 or S10 or S11 or S12) OR (assessment OR assess OR performance OR evaluation OR evaluate OR measure OR measurement OR "leadership development" OR training)
S19	(S1 or S2 or S3) OR "care teams"
S18	(S4 or S5 or S6) OR ("team building" OR teamwork OR "effective teams")
S17	S13 and S14 and S15
S16	S13 and S14 and S15
S15	S7 or S8 or S9 or S10 or S11 or S12
S14	S4 or S5 or S6
S13	S1 or S2 or S3
S12	(MH "Teaching Methods+")
S11	(MH "Educational Measurement+")
S10	(MH "Validation Studies")
S9	(MH "Program Evaluation")
S8	(MH "Professional Competence+")
S7	(MH "Clinical Competence+")
S6	(MH "Team Building")
S5	(MH "Teamwork")
S4	(MH "Leadership")
S3	(MH "Faculty+")
S2	(MH "Multidisciplinary Care Team+")
S1	(MH "Health Personnel+")

Embase search strategy:

('rapid response team'/exp OR 'health care personnel'/exp OR 'medical personnel'/exp OR 'care team') AND (teamwork'/exp OR 'leadership'/exp OR training) AND ('competence'/exp OR 'outcome assessment'/exp OR 'performance measurement system'/exp OR 'validation study'/exp) AND [embase]/lim

PyscINFO search strategy:
(DE "Leadership" OR DE "Leadership Qualities" OR DE "Leadership Style" OR DE "Transformational Leadership" OR "team training" OR teamwork) AND ((DE "Measurement" OR DE "Achievement Measures" OR DE "Aptitude Measures" OR DE "Attitude Measurement" OR DE "Attitude Measures") OR (DE "Competence" OR DE "Professional Competence") OR (DE "Evaluation" OR DE "Course Evaluation" OR DE "Program Evaluation") OR (DE "Training")) AND ((((DE "Health Personnel" OR DE "Allied Health Personnel" OR DE "Medical Personnel" OR DE "Mental Health Personnel") OR (DE "Medical Students")) OR (DE "Medical Internship")) OR (DE "Medical Education") OR "care teams")

Web of Science search strategy:
Topic=(teamwork OR leadership OR "team training") AND Topic=("care providers" OR residents OR students OR nurse* OR physician* OR team OR teams OR faculty) AND Topic=(quality OR assessment OR competence OR evaluation OR metrics OR outcome OR validation OR pilot OR evaluated)
Timespan=1955-2012. Databases=SCI-EXPANDED, SSCI.

ERIC search strategy
((DE "Leadership" OR DE "Student Leadership" OR DE "Teacher Leadership" OR DE "Instructional Leadership" OR DE "Transformational Leadership") OR (DE "Leadership Training")) OR (DE "Teamwork") OR "team training" OR "effective teams" OR (DE "Interprofessional Relationship") OR (DE "Cooperation" OR DE "Educational Cooperation") AND ((((((DE "Clinical Experience") OR (DE "Validity" OR DE "Test Validity" OR DE "Predictive Validity")) OR (DE "Program Effectiveness")) OR (DE "Educational Assessment")) OR (DE "Program Evaluation")) OR (DE "Educational Indicators")) OR (DE "Evaluation" OR DE "Peer Evaluation" OR DE "Self Evaluation (Individuals)" OR DE "Informal Assessment" OR DE "Alternative Assessment" OR DE "Personnel Evaluation" OR DE "Institutional Evaluation" OR DE "Portfolio Assessment" OR DE "Student Evaluation" OR DE "Instructional Material Evaluation" OR DE "Student Teacher Evaluation" OR DE "Computer Software Evaluation" OR DE "Course Evaluation" OR DE "Program Evaluation" OR DE "Summative Evaluation" OR DE "Medical Care Evaluation" OR DE "Medical Evaluation" OR DE "Curriculum Evaluation" OR DE "Needs Assessment" OR DE "Recognition (Achievement)" OR DE "Educational Assessment" OR DE "Formative Evaluation" OR DE "Self Evaluation (Groups)") OR DE "Competency Based Education" OR DE "Competency Based Teacher Education" AND ((DE "Health Personnel" OR DE "Allied Health Personnel" OR DE "Mental Health Workers" OR DE "Nurses" OR DE "Physicians" OR DE "Psychologists") OR (DE "Medical Education" OR DE "Veterinary Medical Education" OR DE "Graduate Medical Education" OR DE "Nursing Education" OR DE "Pharmaceutical Education")) OR (DE "Medical School Faculty") OR "care teams" OR medicine OR healthcare OR "health care" OR DE "Health Services" OR DE "Prenatal Care" OR DE "School Health Services" OR DE "Community Health Services" OR DE "Hospices (Terminal Care)" OR DE "Medical Services"

2. Full Journal Review

We included indices from relevant Journal issues that were not fully indexed in PubMed at the time of the search. *Teaching and Learning in Medicine* and *Medical Teacher* were hand searched from (1/2011 – 3/2012) due to a possible delay in indexing. All 2006 issues of *Simulation in Healthcare* were hand searched as they had not been retrospectively indexed in MEDLINE at the time of the literature search.

3. Bibliography Search

We searched full bibliographies from all included studies in addition to the following review articles and observational studies:

Klein KJ, Ziegert JC, Knight AR, Xiao Y. Dynamic delegation: Hierarchical, shared and deindividualized leadership in extreme action teams. Administrative Science Quarterly. Dec 2006;51(4):590-621.

Kunzle B, Kolbe M, Grote G. Ensuring patient safety through effective leadership behaviour: A literature review. Safety Science. Jan 2010;48(1):1-17.

Hunziker S, Johansson AC, Tschan F, et al. Teamwork and leadership in cardiopulmonary resuscitation. J Am Coll Cardiol. Jun 14 2011;57(24):2381-2388.

Parker SH, Yule S, Flin R, McKinley A. Towards a model of surgeons' leadership in the operating room. BMJ Qual. Saf. Jul 2011;20(7):570-579.

Supplemental Digital Table 2

Leadership Behaviors By Assessment Tool Included in a Systematic Review of the Literature on Team Leadership Assessment Tools in Health Care Action Teams, Published Through March 2012[a,b,c]

Tool name (study first author, publication year)	Level of assessment	**Transition** *Mission analysis* *Goal specification* *Strategy formulation* *Reflection*	**Action** *Patient monitoring* *Systems monitoring* *Team monitoring / Backup behavior* *Coordination*	**Interpersonal** *Conflict management* *Affect management* *Motivation / Empowering* *Communication*
Leadership focused				
Campbell Leadership Descriptor [d] (Sakran,2012)[1]	Individual	• Effectively assigns responsibility and authority • Sets clear work priorities • Gives constructive feedback • Open and responsive to other's ideas	• Sees the big picture in developing a vision for each patient's plan of care • Develops systems for efficiently organizing people and resources • Knows a wide range of people to help get things done • Helps others deal with difficult situations • Provides challenges and coaches	• Develops teamwork among individuals with differing backgrounds • Thinks independently to come up with novel ideas • Helps others achieve more than they thought they were capable of achieving • Positive / upbeat • Believable, ethical, trustworthy • Actively brings energy to a team
EMCRM (Emergency medicine crisis resource management) scale (Youngblood, 2008)[2] (Wallin, 2007)[3]	Individual	• Delegates by name and checks for verification • Knowledge of the environment • Anticipation of and planning for potential problems • Utilization of information	• Coordinates team activities • Distribution of workload • Attention allocation • Utilization of resources • Recognition of limitations/ calls help early	• Calmly inspires confidence • Communication with other team members • Professional behavior/ interpersonal skills
LBDQ (Adapted Leadership Behavior Description Questionnaire)				

LBDQ (Cooper, 1999)[4]	Individual	• Let the team know what was expected through direction and command • Demonstrated use of uniform guidelines • Decided what should be done • Decided how things should be done • Assigned group members to a particular task • Planned work to be done Maintained standards of performance	Displayed a positive attitude

LBDQ (modified) (Cooper, 2001)[5]	Individual	• Let the team know what was expected through direction and command • Demonstrated use of uniform guidelines • Decided what should be done • Decided how things should be done • Assigned group members to a particular task • Planned work to be done Maintained standards of performance	Remains hands off throughout the scenario	Displayed a positive attitude
LBDQ (modified) (Marsch, 2004)[6]	Team	• Let the team know what was expected through direction and command • Decided what should be done • Decided how things should be done • Assigned group members to a particular task		
LBDQ (modified) (Cooper, 2007)[7]	Individual	• Let the team know what was expected through direction and command • Demonstrated use of uniform guidelines • Tried out his/her ideas in the team • Decided what should be done • Decided how things should be done • Assigned group members to a particular task • Planned work to be done • Maintained standards of performance	Assisted team members as required	• Displayed a positive attitude • Was friendly and approachable • Did little things to encourage team members • Treated all team members with respect • Kept to himself/herself [e] Willing to make changes

		• Put team member suggestions into operation • Gave advanced notice of changes • Explained his/her actions • Consulted the group		
LBDQ (modified) (Bradley, 2009)[8]	Team			
LBDQ (modified) (Hunziker, 2009)[9]	Team	• Decided what should be done • Decided how things should be done • Direction or command • Task assignment • Reflection (assesses situation)		
LBDQ (modified) (Streiff, 2011)[10] (Hunziker, 2010)[11]	Team	• Decided what should be done • Decided how things should be done • Direction or command • Task assignment		
LBDQ (modified) (Luscher, 2010) [12]	Team	• Decided what should be done • Decided how things should be done • Direction or command • Task assignment		Conflict resolution
Unnamed (Fernandez-Castelao, 2011)[13]	Team	• Gives direct orders • Assigns tasks • Planning		
Unnamed [f,g] (Gilfoyle, 2007)[14]	Not Defined	• Assigns roles • Considers limitations of team • Overall team atmosphere	Reassessment of progress	• Communication Management of distraction
Unnamed (Grant, 2012)[15]	Individual	• Delegates roles and responsibilities • Prioritizes multiple orders when several are needed	• Manages resources and distributes workload evenly	• Maintains control / manages distractions / controls noise and crowd

		• Verbalizes thoughts and summarizes progress periodically • Asks for and acknowledges team member input • Reassesses and reevaluates situation frequently • Verbally identifies changes in patient status in a timely fashion • Acknowledges information that is inconsistent with interpretation • Avoids fixation errors / uses new information or changes in status as an opportunity to reconsider other dx • Shows anticipation of future events by asking for preparation of equipment or medication not yet needed	• Asks for help early and shows awareness of own limitations • Refrains if possible from active participation	• Uses closed loop communication •
Leadership as a component				
ACLS Mega Code Performance Score Sheet (modified) [g] (Rodgers, 2010)[16]	Individual	• Assured correct clinical care (high-quality CPR was in progress, monitor leads were applied appropriately, etc) • Assigned team member roles	Recognized the ECG rhythm changes	• Demonstrated confidence
AOTP (Assessment of Obstetric Team Performance) (Morgan, 2012)[17] (Tregunno, 2009)[18]	Team	• Encourages team member participation • Engages team members for improvement		
CTS (Clinical Teamwork Skills) (Guise, 2008)[19]	Team			
GCS (Rhode Island Hospital Global Competency Score (Sudikoff, 2009)[20]	Individual			

HFRS (Human Factors Rating Scale) (Morgan, 2007)[21]	Team	• Encourages questions		
MedPACT (Medical performance assessment tool for communication and teamwork) (Weaver, 2010)[22]	Team	• Huddle • Assign resources • Verbalization of changes in plans • Delegation of tasks or assignments		
MHPTS (Mayo High Performance Teamwork Scale)				
MHPTS (Geis, 2011)[23] (Malec, 2007)[24] (varkey, 2009)[25]	Team			• Maintains appropriate balance of command authority and team member participation
MHPTS (modified) (Hamilton, 2009)[26]	Team			
MHPTS (modified) (Hobgood, 2010)[27]	Team			
NOTECHS				
NOTECHS [h] (Moorthy, 2005)[28] (Moorthy, 2006b)[29]	Individual	• Adherence to best practices during the procedure • Delegation of responsibilities	• Appropriate task load distribution	• Authority / assertiveness
NOTECHS (modified) (Powers, 2008)[30] (Moorthy, 2006a)[31]	Individual	• Adherence to best practices during the procedure • Delegation of responsibilities	• Appropriate task load distribution Time management	• Authority / assertiveness
NOTECHS (modified) [i] (Sevdalis, 2008)[32] (Undre, 2007a)[33]	Team[32] Individual[33]	• Adherence to best practices during the procedure • Delegation of responsibilities • Debriefing the team	• Appropriate task load distribution • Time management	• Authority / assertiveness
NOTECHS (modified) (Catchpole, 2010a)[34]	Team	• Reflects on suggestions • Subscribes to standards	• Monitors compliance to standards	• Inspires / motivates / coaches • Responds to stress

(McCulloch, 2009)[35] (Mishra, 2009)[36] (Catchpole, 2007)[37] (Mishra, 2008) [38]		• Deviates from standards with team approval • Planning is shared • Understanding is confirmed • Tasks are prioritized • Values team input	• Identifies deviations from standards • Distributes tasks • Monitors • Allots adequate time •	• Advocates position / appropriate assertiveness •
NOTSS (Nontechnical Skills for Surgeons) (Beard, 2011)[39] (Yule, 2008)[40] (Yule, 2009)[41] (Arora, 2011)[42]	Individual	• Setting and maintaining standards	• Supporting team members	• Coping with pressure • Adopting a suitably forceful manner if appropriate
OSCAR (Observational skill-based clinical assessment tool for resuscitation) (Walker, 2011)[43]	Team	• Advises team on best management and contingency plans • Clearly instructs assistants	• Supervises and supports staff lacking familiarity with tasks or equipment	
OTAS (Observational Teamwork Assessment for Surgery) [j] (Hull, 2011a)[44] (Hull, 2011b)[45] (Undre, 2007b)[46] (Undre, 2006)[47] (Sevdalis, 2009)[48]	Team	• Provides direction, instruction, and explanation to the team	• Draws attention to team processes and changing events • Proactive in effort to direct themselves and team to relevant stimuli and processes	• Fully asserted themselves
Ottawa crisis resource management checklist (Kim, 2009)[49]	Individual	• Acts decisively and maintains control	• Maintains global perspective	• Maintains calm demeanor
Ottawa global rating scale (Kim, 2009)[49] (Kim, 2006)[50]	Individual	• Acts decisively and maintains control	• Maintains global perspective	• Maintains calm demeanor
PoHAT (Postoperative handover assessment tool) (Nagpal, 2011)[51]	Team			

TBR (Teamwork Behavioral Rater) (Frengley, 2011)[52]	Team	• The leader's plan for treatment was communicated to the team • Priorities and orders of action were communicated to the team	• Was able to maintain an overview of the situation •	• Showed an appropriate balance between authority and openness to suggestion
TEAM (Team Emergency Assessment Measure) (Cooper, 2010)[53]	Individual	• Let the team know what was expected of them through direction and command • Appropriate delegation	• Remaining "hands off" as applicable • Monitoring clinical procedures and the environment	
TENTS (Teamwork evaluation of non-technical skills) (Mayer, 2011)[54]	Team	• Delegates as appropriate • Verbalizes plan	• Instructs as appropriate	
TLIS (Team Leadership Interpersonal Skills, modified) (Pascual, 2011)[55]	Individual			
T-NOTECHS (Steinemann, 2011)[56] (Steinemann, 2012)[57]	Team	• Briefs the team prior to patient arrival • Debriefs the team after resuscitation • Accepts input from all team members • Delegates tasks	• Facilitates team problem solving • Keeps a "birds eye view" • Excellent time management • Calls for additional assistance or dismisses team when necessary	• Non-hierarchical
TPOT (Trauma team performance observation tool) (Capella, 2010)[58]	Team			
TRACS (Tool for resuscitation assessment using computerized simulation) (Brett-Fleegler, 2008)[59]	Individual	• Assigns roles	• Utilizes personnel effectively	• Communicates effectively with team • Assumes adequate responsibility when in non-leader roles
Unnamed (Catchpole, 2007b)[60]	Team		• Coordination • Mutually supportive	• Communication • Assertive

				• Calm • Encouraging
Unnamed (Daniels, 2008)[61]	Individual			
Unnamed (Gaba, 1998)[62]	Team	• Acts decisively • Takes command or delegates command as appropriate	• Calls for help when necessary • Coordinates activities • Checks with crew about task status • Stays free to direct except when necessary	
Unnamed [g] (Hoff, 1997)[63]	Team			
Unnamed (Høyer, 2009)[64]	Individual	• Delegation of tasks		
Unnamed (Høyer, 2011)[65]	Individual	• Delegated tasks	• Requested help	
Unnamed (Knudson, 2008)[66]	Individual			
Unnamed (Lubbert, 2009)[67]	Team	• Working according to protocol • Resuscitation in the correct order	• Patient always under supervision	• Efficient leader
Unnamed (Mäkinen, 2007)[68]	Team			
Unnamed (Ottestad, 2007)[69]	Team		• Re-evaluates progress / problems • Stands back for “big picture”	• Calm
Unnamed [g] (Ritchie, 1999)[70] (Sugrue, 1995)[71]	Individual	• Instructions to commence secondary survey • Overall plan announced to all • Gives direction	• Checks task (bloods sent) completed	• Communicate clearly

Unnamed (Schraagen, 2010)[72] (Schraagen, 2011)[73]	Team	• Maintenance of standards	• Workload management • Support of others	
Unnamed (Shetty, 2009)[74]	Team	• Task planning and decision-making	• Response sequencing • Establishing mutual support	
Unnamed (Thomas, 2006)[75]	Team	• Sharing of a mental model • Assigning tasks • Sharing of information and opinion		
Unnamed (Weller, 2011)[76]	Team	• Leader's plan for treatment was communicated • Priorities and orders of actions were communicated • Each team member had a clear role • Plans were adapted when the situation changed	• Task implementation was well-coordinated • Team leader was	• Communication was explicit and directed • Appropriate balance between authority and openness to suggestion • Conflicts impaired team performance [e]
Unnamed (Wright, 2009)[77]	Team	• Explains to other team members exactly what is needed during the task • Listens to the concerns of other team members • Provides statements of team direction, strategy, or priorities for the task • Sets goals for the team and orients the team toward goals • Provides feedback to other team members regarding his/her performance		
Unnamed (Zala-Mezö, 2009)[78]	Team	• Creates a plan including several steps of the future work process • Allocates tasks among the team • Gives a simple instruction to carry out a task		

Unnamed (Zausig, 2009)[79]	Individual	• Coordinate and distribute the workload

[a] Wording of items was shortened when possible to do so without losing inherent meaning of the item/behavior
[b] If a tool was not provided or clearly cited, or the tool was modified but the modifications were not clearly described, the behaviors were considered not provided
[c] When definitions were used as global rating scale anchors, the anchors for the "highest score" were provided
[d] Campbell Leadership Descriptor was adapted from the business sector and therefore items may not all seem applicable to action team setting
[e] Scored as a negative item
[f] Items were scenario specific and thus were summarized to reflect checklists for more than one scenario
[g] Items were primarily clinical, only the nonclinical items were included in the table
[h] Assessment tool was named NOTECHS after publication of these studies
[i] The same assessment tool was used to evaluate individual[33] and team[32] behaviors
[j] Items reflect global definitions because individual behavioral anchors were specialty-specific

Supplemental Digital Table 3

Leadership Styles By Assessment Tool Included in a Systematic Review of the Literature on Team Leadership Assessment Tools in Health Care Action Teams, Published Through March 2012

Tool name	Level of assessment	Leadership styles
Leadership and Team Behavior Measurement Tool (Carlson, 2009)[80]	Team	(1) **Transactional leadership** - a single traditional manager who focuses on getting the job done and takes on the role of setting standards that followers complete to achieve the task (2) **Flexible/dynamic** - no clear emergence of a single leader however all members at one time or another take on leader role by communicating and directing other members on the team to perform tasks (3) **Neither**
Unnamed (Siassakos)[81]	Team	(1) **Directive:** takes over and gives instructions all further decisions made by him or her (2) **Guiding:** evaluates first then only supports previous or junior leader and confirms their decisions (3) **Mixed:** gives some direct instructions but also evaluates and confirms others (4) **Observational:** no direction or guidance to previous leader.
Unnamed (Künzle)[82]	Team	**Content-oriented leadership:** concentrates on the understanding of the task and on actual or potential challenges (1) team members proactively acquire task relevant information (2) team members proactively provide task relevant information or knowledge (3) team members verbalize a problem, provide interpretation of a problem, are looking for a solution, and are setting new goals **Structuring leadership:** is about guiding and structuring team processes by coordinating team activities (1) team members assign tasks or roles to other team members (2) team members offer clear performance strategies or show other team members how to do something (3) team members initiate an action without being asked (4) team members determine the sequence of actions, coordinate pace and rhythm of activities and plan next steps (5) team members manage staff and equipment resources

Unnamed (Tschan, 2006)[83]	Team	(1) **Directive leadership**: gives directions for immediate action, gives specific instructions about how a technical act should be performed, corrects the acts of others, plans ahead, gives directions about the algorithm/protocol (2) **Structuring inquiry**: questions asking for information relevant to the resuscitation procedure, including questions referring to the specifics of the task distribution, what technical acts were already done, information about the patient, the condition of the patient (3) **Other**

Supplemental Digital Table 4

Characteristics of 15 Studies Describing Team Leadership-Focused Assessment Tools Included in a Systematic Review of the Literature on Team Leadership Assessment in Health Care Action Teams, Published Through March 2012

Article	Study design	No. institutions[a]	No. individuals assessed[b]	No. teams assessed[b]	Participant profession[c]	Participant level of training	Participant specialty	MERSQI
Bradley, 2009[8]	Non-randomized, two group	>2	51		P; RN	Student	NA	14.5
Cooper, 2001[5]	Randomized	1	68		P; RN; Other	NR	NR	13.5
Cooper,1999[4]	Cross-sectional	1		20	P; RN	Grad; LP	IM; CC	14
Cooper, 2007[7]	Cross-sectional	1	24		RN; Other	LP	NA	12.7
Fernandez Castelao, 2011[13]	Randomized	1		44	P	Student	NA	14.5
Gilfoyle, 2007[14]	Single group pre/post test	1	15		P	Grad	Ped	10
Grant, 2012[15]	Cross-sectional	1	30		P	Grad	Ped	14
Hunziker, 2009[9]	Randomized	>2		99	P	Grad; LP	IM; GP	16.4
Hunziker, 2010[11]	Randomized	1		63	P	Student	NA	14.5
Luscher, 2010[12]	Cross-sectional	>2		48	P	Student; LP	IM	14
Marsch, 2004[6]	Cross-sectional	1		16	P; RN	Grad; LP	IM;CC	11.3
Sakran, 2012[1]	Cross-sectional	1	7		P	LP	Surg	11.3
Streiff, 2011[10]	Cross-sectional	1	237		P	Student	NA	14
Wallin, 2007[3]	Single group pre/post test	1		15	P	Student	NA	12
Youngblood, 2008[2]	Randomized	2	30		P	Student	NA	15

Abbreviations: MERSQI, medical education research study quality instrument; NR, not reported or not clear; NA, not applicable; P, physician; RN, nurse; Grad, graduate medical trainee; LP, licensed provider; Surg, surgery; Ped, pediatrics; IM, internal medicine; CC, critical care; GP, general practitioner

[a] If the number of institutions was not clearly reported it was recorded as one[84]

[b] Cells were left blank when the number of individuals or teams assessed was not clear

[c] Other category may include technicians, pharmacists, midwives, prehospital providers, perfusionists, social workers, registration, transport, child life

Supplemental Digital Table 5

Characteristics of 68 Studies Describing Assessment Tools with a Team Leadership Component Included in a Systematic Review of the Literature on Team Leadership Assessment in Health Care Action Teams, Published Through March 2012

Article	Study design	No. institutions[a]	No. individuals assessed[b]	No. teams assessed[b]	Participant profession[c]	Participant level of training	Participant specialty
Arora, 2011[42]	Cross-sectional	>2	25		P	Grad; LP	Surg
Beard, 2011[39]	Cross-sectional	>2	85		P	Grad	Anes; Surg; OB
Brett-Fleegler, 2008[59]	Cross-sectional	1	25		P	Grad; LP	Ped
Capella, 2010[58]	Single group pre/post test	1		40	P; RN	Grad; LP	Surg
Carlson, 2009[80]	Cross-sectional	1		44	P	Student	NA
Catchpole, 2010[34]	Single group pre/post test	>2		61	NR	NR	NR
Catchpole, 2007a[37]	Cross-sectional	2		42	P; RN	Grad; LP	Anes; Surg
Catchpole, 2007b[60]	Single group pre/post test	1		50	NR	NR	NR
Cooper, 2010[53]	Cross-sectional	1		3	P; RN	Student	NA
Daniels, 2008[61]	Cross-sectional	2	19	10	P; RN	Grad; LP	Anes; OB
Frengley, 2011[52]	Randomized	>2		40	P; RN	Grad; LP	Anes; IM; CC
Gaba, 1998[62]	Cross-sectional	>2	72	18	P; RN	Grad; LP	Anes
Geis, 2011[23]	Cross-sectional	1	81	24	P; RN; RT; Other	LP	EM; Ped
Guise, 2008[19]	Cross-sectional	1		3	NA	NA	NA
Hamilton, 2009[26]	Cross-sectional	1	11	10	P	Grad	Surg
Hobgood, 2010[27]	Randomized	2		32	P; RN	Student	NA
Hoff, 1997[63]	Cross-sectional	1		425	P	Grad; LP	Surg
Hoyer, 2009[64]	Cross-sectional	>2	72		P	LP	IM
Hoyer, 2011[65]	Randomized	>2	46		P	LP	IM
Hull, 2011a[44]	Cross-sectional	1		30	P; RN	LP	Anes; Surg
Hull, 2011b[45]	Cross-sectional	1		20	P; RN; Other	LP	Anes; Surg
Kim, 2006[50]	Cross-sectional	1	58	112	P	Grad	Anes; Surg; IM; EM; FM; Psych; Neuro

Kim, 2009[49]	Cross-sectional	1	60		P	Grad	Anes; Surg; IM; EM; FM; Psych; Neuro
Knudson, 2008[66]	Randomized	1	10		P	Grad	Surg
Künzle, 2010[82]	Cross-sectional	1	24	12	P; RN	Grad; LP	Anes
Lubbert, 2009[67]	Cross-sectional	1		387	P; RN; Other	Grad; LP	Anes; Surg; EM; Neuro; Rad
Mäkinen, 2007[68]	Cross-sectional	2		75	RN	LP	NR
Malec, 2007[24]	Single group pre/post test	1		273	P; RN	Grad; LP	NR
Mayer, 2011[54]	Single group pre/post test	1	195		P; RN; RT	LP	Anes; Surg; Ped
McCulloch, 2009[35]	Single group pre/post test	1		103	P; RN	LP	Anes; Surg
Mishra, 2008[38]	Cross-sectional	1		26	P; RN	LP	Anes; Surg
Mishra, 2009[36]	Single group pre/post test	1		65	P; RN	LP	Anes; Surg
Moorthy, 2005[28]	Cross-sectional	1	27		P	Grad	Surg
Moorthy, 2006a[31]	Cross-sectional	1	20		P	Grad	Surg
Moorthy, 2006b[29]	Cross-sectional	1	27		P	Grad	Surg
Morgan, 2007[21]	Cross-sectional	1		12	P; RN	Grad; LP	Anes; OB
Morgan, 2012[17]	Cross-sectional	>2		12	P; RN	LP	Anes; FM; OB
Nagpal, 2011[51]	Cross-sectional	2		100	NR	NR	NR
Ottestad, 2007[69]	Cross-sectional	1		23	P; RN; RT; Other	Grad; LP	Anes; Surg; IM
Pascual, 2011[55]	Single group pre/post test	2	12	3	MLP	LP	CC
Powers, 2008[30]	Cross-sectional	1	20		P; RN	Grad; LP	Surg
Ritchie, 1999[70]	Cross-sectional	1	50		P; RN; Other	Grad; LP	Anes; Surg; EM
Rodgers, 2010[16]	Cross-sectional	>2	34		RN	Student	NA
Schraagen, 2010[72]	Cross-sectional	1		19	P; RN	LP	Anes; Surg
Schraagen, 2011[73]	Cross-sectional	1		1	P; RN; Other	LP	Anes; Surg

Sevdalis, 2008[32]	Cross-sectional	1		29	P; RN; Other	Grad; LP	Anes; Surg
Sevdalis, 2009[48]	Cross-sectional	2		12	NR	NR	NR
Shetty, 2009[74]	Cross-sectional	2		3	NA	NA	NA
Siassakos, 2011[81]	Cross-sectional	>2		19	P; Other	Grad; LP	OB
Steinemann, 2011[56]	Single group pre/post test	1		244	P; RN; RT; MLP; Other	Grad; LP	Surg; EM
Steinemann, 2012[57]	Cross-sectional	1		103	P; RN; RT; MLP; Other	Grad; LP	Surg; EM
Sudikoff, 2009[20]	Randomized	1	16		P	Grad	Ped
Sugrue, 1995[71]	Cross-sectional	1	50		P; RN; Other	Grad; LP	Surg; EM; Ped; CC
Thomas, 2006[75]	Cross-sectional	1		132	P; RN; RT	Grad; LP	Ped
Tregunno, 2009[18]	Cross-sectional	1		12	NR	NR	OB
Tschan, 2006[83]	Cross-sectional	>2		21	P; RN	Grad; LP	NR
Undre, 2006[47]	Cross-sectional	1		50	P; RN; Other	LP	Anes; Surg
Undre, 2007a[33]	Cross-sectional	1		20	P; RN; Other	Grad; LP	Anes; Surg
Undre, 2007b[46]	Cross-sectional	2		50	P; RN; Other	Grad; LP	Anes; Surg
Varkey, 2009[25]	Cross-sectional	1		1	P	Grad	IM
Walker, 2011[43]	Cross-sectional	1		8	P;RN	LP	Anes; IM
Weaver, 2010[22]	Non-randomized, two group	1	55		P; RN; MLP; CRNA; Other	LP	Anes; Surg
Weller, 2011[76]	Cross-sectional	>2		40	P; RN	LP	IM;CC
Wright, 2009[77]	Cross-sectional	1	35		P	Student	NA
Yule, 2008[40]	Cross-sectional	>2		6	NA	NA	NA
Yule, 2009[41]	Cross-sectional	>2		6	NA	NA	NA

Zala-Mezo, 2009[78]	Cross-sectional	1		23	P; RN	Student; Grad; LP	Anes
Zausig, 2009[79]	Randomized	>2	42		P	LP	Anes

Abbreviations: NR, not reported or not clear; NA, not applicable; P, physician; RN, nurse; MLP, mid-level provider; CRNA, certified registered nurse anesthetist; RT, respiratory therapist; Grad, graduate medical trainee; LP, licensed provider; Surg, surgery; Anes, anesthesia; OB, obstetrics; Ped, pediatrics; IM, internal medicine; CC, critical care; EM, emergency medicine; FM, family medicine; Psych, psychiatry; Neuro, neurology; Rad, radiology; GP, general practitioner

[a] If the number of institutions was not clearly reported it was recorded as one[84]

[b] Cells were left blank when the number of individuals or teams assessed was not clear

[c] Other category may include technicians, pharmacists, midwives, prehospital providers, perfusionists, social workers, registration, transport, child life

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