

eSuppl 1: Study characteristics

Study (author, year)	Location	Program duration (yrs)	Number of residents**	Messick criteria demonstrated***
Abu-Laban, 2013	Canada (British Columbia, University of British Columbia)	5	Participants: 12	2, 6
Adler, 2011	USA (Illinois, University of Chicago)	3(n=1), 4(n=1)	Participants across 2 sites: 69	3, 4
Aghera, 2012*	USA (New York, Brooklyn Maimonides Medical Centre)	3	Participants: 15	1,5
Ahn, 2011*	USA (Illinois, University of Chicago)	?	not specified	6
Akhtar, 2010	USA (Florida, University of Florida)	3	Participants (EM): 42	0
Ali, 2013*	USA (Georgia, Emory University)	?	not specified	5
An-Grogan, 2013*	USA (Illinois, Chicago)	?	not specified	5
Barlas, 2011*	USA (New York, New York Hospital Queens)	3	All residents: 60	5
Barsuk, 2009	USA (Illinois, Northwestern University Feinberg School of Medicine)	4	EM and IM participants: 103	4
Beeson, 2006	USA (Multicentre)	?	variable	0
Blouin, 2006	Canada (Ontario, Queen's University)	5	All years: 30	0
Bohrn, 2014*	USA (Illinois, WellSpan York Hospital)	3	21 residents	1
Bounds, 2013	USA (Multicentre)	3(n=3), 5(n=1)	PGY2 (30), PGY3 (39), PGY4/PGY5 (3)	1, 4
Brazil, 2012	Australia (Queensland, Royal Brisbane and Women's Hospital)	3	All PGY1: 20	5, 6
Burnette, 2009	USA (Multicentre)	3	PGY1 (37), PGY2 (42), PGY3 (16)	2
Carrière, 2009	Canada (Quebec, Université de Montréal)	5	PGY1 (21) PGY2 (21) Seniors (11)	3
Chan, 2014*	Canada (Ontario, McMaster University)	5	PGY1 and PGY2: 14	1, 2, 3, 5
Christian, 2012*	USA (Illinois, Cook County Hospital Stroger)	5	Participants only (45): PGY2 (2), PGY3 (30), PGY4 (10), PGY5 (3)	3, 4, 6
Clark, 2010*	Canada (Vancouver, University of British Columbia)	5	not specified	1, 2
Cloutier, 2013*	USA (Portland, Oregon Health and Science University)	3	not specified	0
Cooper, 2012	USA (Indiana, Indiana University School of Medicine)	3	Participants: 76	2, 3, 4
Datta, 2012*	USA (New York, New York Hospital Queens)	3	Participants: 29	2, 5
Dorfsman, 2009	USA (Pennsylvania, University of Pittsburgh)	3	Participants: PGY1 (3), PGY2 (28), PGY3 (1)	1, 2, 6
Flowerdew, 2012	England (London, Imperial College)	?	not specified	1, 2

Franc, 2012	Canada (Alberta, University of Alberta)	5	Participants: 25	0
Frederick, 2011	USA (Illinois, University of Illinois College of Medicine at Peoria)	3	All PGY3 (between 1994-2005): 85 (mean 7 per year)	4, 5
Gallagher, 2013*	USA (Illinois, Northwestern University Feinberg School of Medicine)	4	Participants: all 24 junior residents; sample of 6 senior residents	1, 2
Girzadas, 2007	USA (Illinois, Advocate Christ Medical Center)	3	All residents (44): incoming EM1 (11) EM1 (11) EM2 (11) EM3 (11)	1, 2, 4
Hauff, 2014	USA (Michigan, University of Michigan)	4	Total incoming PGY1: 28	1, 2, 5
Hogan, 2012*	USA (Illinois, University of Chicago)	4	Participants across 6 residency programs	1, 2, 3
Howes, 2011*	USA (Chicago)	3	Participants: 24	1, 5
Ilgen, 2011	USA (Boston)	4	Total PGY4: 15	1, 6
Jang, 2013	USA (California)	4	Participants: 127	1, 2
Jhun, 2014*	USA	5	Total residents: 67; Participants: 54	1, 2, 6
Kassam, 2014	Canada (Calgary)	5	not specified	1, 3
Kim, 2009	Canada (Ottawa)	5	Participants: PGY1 (32), PGY3 (28)	1, 3
Kusmiesz, 2011*	USA (Pennsylvania)	?	not specified	4
Kyaw, 2012	England (London)	3	not specified	1, 2, 3
LaMantia, 2009	USA (8 centres across the country)	3 (n=6), 4 (n=2)	not specified	1, 2, 3
Ledrick, 2009	USA (Ohio)	3	All residents (35): PGY1 (12) PGY2 (12) PGY3 (11)	1, 2, 3, 4, 5, 6
Ledrick, 2013*	USA (Ohio)	3	Total between 2006 and 2012: PGY1 (81), PGY2 (83), PGY3 (79)	4
Lee, 2010*	Canada (Ottawa)	5	All PGY1: 12	1, 3, 5
Lee, 2012	USA	3	All PEM fellows: 240	2
Leech, 2013*	USA (Florida)	3	Participants: 14	3
Leone, 2011*	USA (Oregon, Chicago)	4	Participants: 45	3
Lifchez, 2012	USA (Baltimore)	3	Participants: 7	5
Mamtani, 2014*	USA (Pennsylvania, Philadelphia)	4	not specified	0
Marinelli, 2012*	USA (Chicago)	4	Participants: 45	1
McGrath, 2014*	USA (Columbus, OH)	3	Participants: 35	5
McIntosh, 2012	USA (Jacksonville, University of Florida College of Medicine, Jacksonville)	3	not specified	6
McLaughlin, 2007	USA (Albuquerque, New Mexico)	3	Participants: 27	2, 4

Minnigan, 2012*	USA (Indianapolis, IN)	3	All PGY2: 12	1
Motov, 2011	USA (Brooklyn, NY)	3	not specified	1, 2
Murray, 2014*	USA (Ann Arbor, Michigan)	4	Participants: 52	3
Nelson, 2013*	USA (Missouri, Children's Mercy Hospital and Clinic)	3	Participants: 55	5
Noble, 2007	USA (Multicentre)	4	Participants: 12	2
Noeller, 2008	USA (Multicentre)	3	All residents: 38	1, 2
O'Connor, 2014*	USA (Multicentre)	?	not specified	0
Pavlic, 2014*	USA (Michigan, University of Michigan)	4	not specified	1
Reisdorff, 2006	USA (Michigan, Michigan State University)	3	Participants: 19: PGY2(9), PGY3 (10)	1
Ryan, 2010	USA (New York, New York Hospital Queens)	3	All residents: 30 (10 per year)	1, 3
Sampsel, 2014*	Canada (Ontario, University of Ottawa)	5	All residents: 45	6
Samuel, 2009	Australia (multicentre)	5	Participants: 47	1
Scher, 2011	USA (Connecticut, University of Connecticut Health Center)	5	Participants (EM): 18	2
Schwaab, 2011	USA (Ohio, Ohio State University)	3	all residents: 36 participants: 27	1, 2
Shih, 2013*	USA (New Jersey, Morristown Medical Center)	3	Total PGY1 residents over 5 years: 36 (avg 7 per year)	5
Sullivan, 2009	USA (Missouri, University of Missouri)	3	PGY1 (10) PGY2 (8) PGY3 (8)	3
Thundiyil, 2010	USA (Florida, University of Florida)	3	PGY3 Participants (2002-2006): 51	5
Wagner, 2013*	USA (Michigan, Central Michigan University)	3	not specified	2
Wallenstein, 2010	USA (Georgia, Emory University)	3	All PGY1: 18	5
Williams, 2009	USA (Texas, San Antonio Military Medical Center)	?	not specified	3
Wittels, 2013*	USA (Massachusetts, Harvard Affiliated Programs at Brigham and Women's Hospital and Massachusetts General Hospital)	?	not specified	3
Zabar, 2009	USA (New York, New York University School of Medicine)	?	All PGY2: 15	3, 6

Note:

* = abstract only

** = number of participants if number of residents unclear

*** Messick criteria: 1 = Structural validity; 2 = Content validity; 3 = Substantive validity; 4 = External validity; 5 = Generalizability validity; 6 = Consequential validity; 0 = none reported

PGY = post-graduate year (i.e., residency level)