Supplementary information for

Sources of Inaccuracy in the Measurement of Adult Patients' Resting Blood Pressure in Clinical Settings: A Systematic Review

List of Supplementary Tables

For all tables: NR = Not Reported in publication, LoA = Limits of agreement, SBP= Systolic blood pressure, DBP = Diastolic blood pressure, M/F = number of males/number of females in study

Patient-related sources of inaccuracy

Supplementary Table 1. Studies examining the effect of acute meal ingestion

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Ingested food	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Ahuja et al. 2009[16]	Australia	adult volunteers	35	57±13	NR	light breakfast meal with 350mL water	mean of measurements every 15min for 120min after ingestion	−0.8	*ns*	−1.9	<.05	90	participants not sufficiently described
Taylor et al. 2014[17]	USA	healthy young adults	17	29±2	9/8	mixed meal (supplying 40% of daily resting energy expenditure)	60min after ingestion	+2	*ns*	−2	*ns*	90	recruitment not sufficiently described
							180min after ingestion	−6	<.05	−5	<.05		

Supplementary Table 2. Studies examining the effect of acute alcohol use

Reference	Country	Participants	*N*	Age in *y* ±*SD* (*range*)	M/F	Dose	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Barden et al. 2013[18]	Australia	healthy drinkers	24	(20–65)	24/0	41g	4 hours after ingestion	−4.7	<.001	−3.9	<.001	100	no major limitations
Carter et al. 2011[19]	USA	adult volunteers	15	23±1	12/3	1.0g/kg	30min after drink	+4	<.05	+5	<.05	86	recruitment procedure not sufficiently described; random allocation procedure not sufficiently described; partial blinding of investigators reported; small sample size
		adult volunteers	15	25±1	11/4	Placebo	30min after drink	+5	<.05	+7	<.05		
Hering et al. 2011[20]	USA, Poland	adult normotensives	11	43±2	6/5	1.0g/kg	10min after drink	+2	*ns*	+4	*ns*	82	recruitment procedure not sufficiently described; randomisation method not sufficiently described; investigator blinding not reported; small sample size
			13	44±2	8/5			+24	<.001	+15	<.001		
Mahmud et al. 2002[21]	Ireland	healthy normotensives	8	(21–40)	3/5	0.8g/kg	30min after drink	−2	<.05	−1	<.05	86	recruitment method not sufficiently described; randomisation procedure not sufficiently described; blinding of investigators not sufficiently described; small sample size
							60min after drink	−3	<.05	−4	<.05		
							90min after drink	−6	<.05	−6	<.05		
Hashimoto et al. 2001[22]	Japan	healthy adults	11	34±1	11/0	0.8g/kg (Japanese vodka)	30min after drink	0	*ns*	NR	NR	81	recruitment procedure not sufficiently described; randomisation procedure not sufficiently described; blinding of investigators not reported; small sample size
							120min after drink	−6	*ns*	NR	NR		
						0.8g/kg (red wine)	30min after drink	−4	*ns*	NR	NR		
							120min after drink	+2	*ns*	NR	NR		
Iwase et al. 1995[23]	Japan	healthy young adult volunteers	7	25.0 ±4.7 (21–34)	6/1	0.6g/kg	5min after drink	~+5	<.05	~+3	<.05	79	randomisation of condition (control/experimental) order was not reported; blinding of investigators was not reported; quantified results not reported in text (estimated from graph); small sample size
							10min after drink	~+3	<.01	~+2	<.05		
							further than 10min after drink	no effect	*ns*	no effect	*ns*		
McDougle et al. 1995[24]	USA	healthy adults	12	30.7±8.1 (22–49)	7/5	1.1ml/kg	40min after drink	~+5	<.003 vs. placebo	NR	NR	82	recruitment method not sufficiently described; random order of conditions not reported; small sample size; potential order effects not controlled for
Perkins et al. 1995[25]	USA	adult smokers	18	22.3±0.7	9/9	0.5g/kg	up to 120min after drink	~+2.5	*ns*	~+2.5	*ns*	75	recruitment method not sufficiently described; randomisation procedure not sufficiently described; investigator blinding not reported; small sample size; results not reported in quantified form (had to be estimated based on figure)
Kojima et al. 1993[26]	Japan	hypertensive drinkers	21	56.5±11.8 (33–73)	21/0	1.0ml/kg	2 hours after ingestion	−21	<.001	−14	<.001	95	recruitment method not sufficiently described
Kawano et al. 1992[27]	Japan	hypertensive drinkers	16	55.2±3.3 (22–70)	16/0	1.0ml/kg	3–4 hours after ingestion	−23.6	<.05 vs. placebo	−11.8	<.05	95	recruitment method not sufficiently described
Potter et al. 1991[28]	UK	normotensive low to moderate drinkers	16	37±16.7 (20–66)	16/0	0.75g/kg	maximum effect up to 3 hours after drink	+9	<.01	+16	<.01	95	no control condition
		hypertensive low to moderate drinkers	18		18/0			+12	<.01	+6	<.01		

Reference	Country	Participants	*N*	Age in *y* ±*SD* (*range*)	M/F	Dose	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Grassi et al. 1989[29]	Italy	normotensive adults	7	24.0±1.5	7/0	0.75g/kg	20min after drink	+10.8	<.05	+9.3	<.05	82	recruitment procedure not sufficiently described; random order of conditions not reported; investigator blinding procedure not sufficiently described; small sample size
Carretta et al. 1988[30]	Italy	healthy light drinkers	10	37.4±10.5 (21–50)	NR	0.4g/kg	25min after infusion	no effect	*ns*	no effect	*ns*	75	recruitment procedure not sufficiently described; participants not sufficiently described; randomisation of placebo-alcohol order not reported; investigator blinding not reported; small sample size
		hypertensive light drinkers	10	37.4±10.3 (21–50)	NR			no effect	*ns*	no effect	*ns*		
		hypertensive moderate drinkers	10	37.2±10.2 (21–50)	NR			no effect	*ns*	no effect	*ns*		
		hypertensive moderate drinkers	10	38.1±10.4 (21–50)	NR	0.8g/kg		no effect	*ns*	no effect	*ns*		
Potter et al. 1986[31]	UK	hypertensive moderate drinkers	9	49.4 (24–66)	9/0	0.75g/kg	up to 60min after drink	increase	<.001	NR	*ns*	79	recruitment method not sufficiently described; random allocation not sufficiently described; investigator blinding not sufficiently described; small sample size; not all participants were also in control condition; results not reported in sufficient detail
		hypertensive light drinkers	9	51.9 (41–66)	9/0			NR	*ns*	NR	*ns*		
Reed et al. 1986[32]	USA	European adults	46	27.7 (20–37)	46/0	0.59g/kg	60min after drink	−3.2	*ns*	−0.7	<.002 (*F*-test)	91	no control group (e.g. placebo)
							120min after drink	−4.8	*ns*	−2.6			
							180min after drink	−3.9	*ns*	−0.4			
		Japanese adults	30	25.6 (20–38)	30/0		60min after drink	−5.5	<.008 (*F*-test)	−4.2	*ns*		
							120min after drink	−9.6		−4.4	*ns*		
							180min after drink	−8.9		−2.4	*ns*		
		Chinese adults	27	26.4 (20–37)	27/0		60min after drink	−8	*ns*	−7.4	<.02 (*F*-test)		
							120min after drink	−9.7	*ns*	−5.4			
							180min after drink	−8.1	*ns*	−3.1			
Weise et al. 1986[33]	Germany	healthy, infrequent drinkers	8	24.3±2.3	7/1	0.7g/kg	up to 2 hours after ingestion	NR	*ns*	NR	*ns*	77	recruitment method not sufficiently described; small sample size; no control group.
Kupari et al. 1983[34]	Finland	infrequent to moderate drinkers	23	35.6 (23–62)	23/0	1.0g/kg	30min after drink	+5	<.01	+4	*ns*	90	recruitment method not sufficiently specified; no control group (e.g. placebo drink)
							60min after drink	+3	*ns*	0	*ns*		
							90min after drink	−3	*ns*	−1	*ns*		
							120min after drink	−4	<.01	−1	*ns*		
							180min after drink	−6	<.05	−1	*ns*		

Reference	Country	Participants	*N*	Age in *y* ±*SD* (*range*)	M/F	Dose	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Delgado et al. 1975[35]	USA	normal volunteers	10	29.9 (22–31)	7/3	0.7g/kg	30min after drink	+2.6	*ns*	+2.5	*ns*	82	recruitment procedure not sufficiently described; no control condition; small sample size
							60min after drink	−2.7	*ns*	+1.4	*ns*		
							90min after drink	−3.0	*ns*	+1.1	*ns*		
							120min after drink	−4.1	<.05	−1.7	*ns*		
							150min after drink	−2	*ns*	+1.1	*ns*		
							180min after drink	−2.0	<.05	+0.2	*ns*		

Supplementary Table 3. Studies examining the effect of acute caffeine use

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period (after ingestion)	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Grasser et al.[40]	Switzerland	healthy young adults	25	22.5±0.6 (20–31)	13/12	114mg	mean of measurements over 120min	+3.3	<.005	+4.1	<.005	86	subjects not blinded; investigator blinding not reported
Buscemi et al. 2011[41]	Italy	adult volunteers	40	21–49	19/21	130mg	30min	+5	<.05	+4	<.001	100	no major limitations
							60min	+4	<.05	+3	<.001		
McMullen et al. 2011[42]	UK	participants in supine position	12	36±7.8 (25–57)	2/10	67mg	mean of measurements 30min and 60min	+8.9	<.05	+1.1	*ns*	93	randomisation procedure not sufficiently described; investigator blinding procedure not sufficiently described
						133mg		+10.8	<.05	+2.2	*ns*		
						200mg		+5.5	*ns*	+1.3	*ns*		
		participants in upright position				67mg		+8.0	<.05	+2.8	<.05		
						133mg		+10.7	<.05	+5.1	<.01		
						200mg		+5.2	*ns*	+2.4	*ns*		
Buscemi et al. 2010[43]	Italy	healthy adult volunteers	20	31±2 (21–49)	10/10	130mg	30min	+3	<.05	+4	<.05	100	no major limitations
							60min	+3	<.05	+4	<.05		
Arciero et al. 2009[44]	USA	older healthy moderate caffeine consumers	10	55.0±5 (50–67)	0/10	5mg/kg (fat free mass)	15–90min	+4	<.05	+3	<.05	89	recruitment procedure not sufficiently described; randomisation procedure not sufficiently described; investigator blinding procedure not sufficiently described
		younger healthy moderate caffeine consumers	10	19.0±1.5 (18–22)	0/10			no effect	*ns*	+3	<.05		
Ozkan et al. 2008[45]	Turkey	healthy adults	23	27.69±6.27	13/10	300mg	60min	+4.78	*ns*	+0.87	*ns*	86	recruitment procedure not described; randomisation procedure not sufficiently described; Investigator blinding procedure not sufficiently described
Hodgson et al. 2005[46]	Australia	adults with history of coronary artery disease	20	62.1 ± 6.2	NR	150mg	30min	+9.4	<.05	+3.0	<.05	100	no major limitations
Karatzis et al. 2005[47]	Greece	healthy adult nonsmoking caffeine users	16	29±3.2 (24–38)	8/8	80mg	60min	no effect	*ns*	~+4	<.01	86	recruitment not described; randomisation procedure not sufficiently described; investigator blinding procedure not sufficiently described
							90min	no effect	*ns*	~+4	<.05		
Vlachopo-ulos et al. 2002[48]	Greece	treated hypertensive	10	62±7	NR	250mg	30–180min	+11.4	<.05	+7.7	<.05	82	recruitment not described; participants not sufficiently described; randomisation procedure not described; small sample size
Watson et al. 2002[49]	UK	caffeine naive	14	23–38	7/7	200mg	30min	+8.7	<.05	+5.5	<.05	86	recruitment not sufficiently described; randomisation and blinding procedures not sufficiently described
		caffeine repletes						+4.5	<.05	+1.1	NR		

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period (after ingestion)	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Mahmud et al. 2001[50]	Ireland	healthy adults	7	26±2.6	3/4	150mg	30min	~+9	*ns*	~+7	<.05	81	recruitment procedure not described; randomisation procedure not sufficiently described; Investigator blinding not sufficiently described; values of results not stated in text (estimated from graph)
							60min	~+7	*ns*	~+6	<.05		
							90min	~+9	*ns*	~+8	<.05		
Shepard et al. 2000[51]	USA	high risk of hypertensions	11	24±0.5	11/0	3.3mg/kg	0–300min	+3	<.05	+3	<.05	86	recruitment not sufficiently described; participants not sufficiently described; no mention of randomisation
		low risk of hypertension	20	24±0.6	20/0	3.3mg/kg		+5	<.05	+4	<.05		
Hodgson et al. 1999[52]	Australia	healthy adult nonsmokers	20	56.2±1.1 (35–73)	20/0	180mg	30min	+6.6	<.05	+3.5	<.05	100	no major limitations
							60min	+6.7	<.05	+4.7	<.05		
Bender et al. 1997[53]	USA	normotensives	12	23.6±1.4 (21–26)	6/6	5mg/kg	90min	+2	*ns*	0	*ns*	93	recruitment method not sufficiently described; randomisation process not sufficiently described
							180min	+7	*ns*	+4	*ns*		
							270min	+9	*ns*	+2	*ns*		
Lovallo et al. 1996[54]	USA	borderline hypertensives	24	28±0.9	24/0	placebo	40min	+1	*ns*	+1	*ns*	89	no random allocation; recruitment not sufficiently described
						3.3mg/kg		+6	<.05	+4	<.05		
		normotensives	24	30±1.2	24/0	placebo		+2	*ns*	−1	*ns*		
						3.3mg/kg		+11	<.05	+8	<.05		
Pincomb et al. 1996[55]	USA	normotensives (protocol 1)	23	20–39	23/0	3.3mg/kg	40min	+7	<.0001	+5	<.0001	89	randomisation of placebo / caffeine order not reported; investigator blinding procedure not sufficiently described
		normotensives (protocol 2)						+7	<.0001	+4	<.0001		
		borderline hypertensives (protocol 1)	24		24/0			+10	<.0001	+9	<.0001		
		borderline hypertensives (protocol 2)						+8	<.0001	+8	<.0001		
Hasenfratz et al. 1994[56]	Switzerland	nonsmoking coffee drinkers	20	33.4 ± 7.0 (23–44)	0/20	1.5mg/kg	>30min	~+10	<.001	~+7	<.01	85	investigator blinding not reported; subject blinding not reported
						3.0mg/kg		~+8	<.01	~+7	<.05		
						6.0mg/kg		~+5	*ns*	~+4	*ns*		
Sung et al. 1994[57]	USA	normotensive	12	30–45	12/0	3.3mg/kg	30–180min	+9	<.001	+8	<.001	86	recruitment not sufficiently described; participants not sufficiently described; no mention of randomisation
		hypertensive	18	24±0.6	18/0	3.3mg/kg		+12	<.001	+11	<.001		
Haigh et al. 1993[58]	UK	normotensives supine	8	73.8±6.0 (67–82)	4/4	250mg vs. placebo	90min	+12.1	.008	+7.4	<.001	82	recruitment not sufficiently described; randomisation and blinding processes not described; small sample size
		normotensives standing						+9.7	.038	+8	.013		
Casiglia et al. 1991[59]	Italy	normotensive non-coffee drinkers	15	24–30	4/11	200mg	30min	+0.5	*ns*	+0.6	*ns*	86	randomisation procedure not explained; blinding procedures not explained; investigator blinding not apparent
							60min	+2.5	*ns*	+2.1	<.05		
							90min	−2.5	*ns*	+4.4	<.05		
							120min	−5	*ns*	+6.7	<.05		

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period (after ingestion)	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Pincomb et al. 1991[60]	USA	low risk hypertension	14	27.5±1.3	14/0	3.3mg/kg	40min	+9.2	<.0001	+4.4	<.0001	89	recruitment not sufficiently described; no random allocation
		high risk of hypertension (normal exercise BP)	13	26.4±1.4	13/0			+5.9	<.0001	+5.9	<.0001		
		high risk of hypertension (high exercise BP)	7	31.6±1.6	7/0			+10.0	<.0001	+11.4	<.0001		
Astrup et al. 1990[61]	Denmark	normotensives	6	25±1 (20–32)	3/3	placebo	180min	+3.2	*ns*	+1.8	*ns*	89	recruitment method not sufficiently described; only partial randomisation; small sample size
						100mg		+2	*ns*	+2.7	*ns*		
						200mg		+1.5	*ns*	−0.2	*ns*		
						400mg		+6.3	<.05	+6.3	<.05		
Lane et al. 1990[62]	USA	normotensives	25	18–36	25/0	3.5mg/kg vs. placebo	45min	+8	<.0001	+8	<.0001	89	participants not sufficiently described; no random allocation
Nussberger et al. 1990[63]	Switzerland	normotensive	8	24–28	8/0	250mg	180min	+12	<.01	+13	<.001	79	recruitment not sufficiently described; participants not described; randomisation procedure not described; investigators not blinded
Lovallo et al. 1989[64]	USA	low-risk of hypertension	17	21–35	17/0	placebo	40min	+1	*ns*	+0	*ns*	93	recruitment method not sufficiently described; randomisation procedure not explained
						3.3mg/kg		+6	<.0001	+4	<.0001		
		high risk of hypertension	17	21–35	17/0	placebo		+1	*ns*	+1	*ns*		
						3.3mg/kg		+7	<.0001	+8	<.0001		
Pincomb et al. 1988[65]	USA	normotensive	41	23±0.4 (21–36)	41/0	3.3mg/kg vs. placebo	40min	+4	<.01	+5	<.01	89	recruitment not sufficiently described; no random allocation
Prakash et al. 1988[66]	USA	healthy adult volunteers	9	25–39	7/2	175mg	30min	+0.4	*ns*	−2.5	*ns*	81	recruitment not sufficiently described; randomisation procedure not described; investigator blinding not sufficiently described; small sample size may have led to lack of power
Lane et al. 1987[67]	USA	normotensives	30	22 (19–28)	30/0	250mg	45min	+7	<.0005	+4	<.0005	89	recruitment not sufficiently described; no random allocation
Myers et al. 1987[68]	Canada	patients recovering from acute myocardial infarction	70	58±2 (36–72)	55/15	300mg	maximum increase within 4 hours after consumption	+9	<.001	+8	<.001	89	recruitment procedure not sufficiently described; randomisation procedure not sufficiently described; observer blinding not sufficiently described
Passmore et al. 1987[69]	UK	normotensives	8	NR	NR	90mg vs. placebo	60–240min	+4.5	<.05	+8	<.01	93	recruitment not sufficiently described; small sample size
						180mg vs. placebo		+7	<.01	+6.5	<.01		
						360mg vs. placebo		+10.6	<.01	+8	<.01		
Ray et al. 1986[70]	USA	normotensives	9	NR	6/3	placebo (decaf)	1–10min	−3	*ns*	+4	*ns*	82	quasi-random ordering; frequency of placebo not explained; small sample size
						250mg		+14	<.05	+10	<.05		

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period (after ingestion)	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Lane et al. 1985[71]	USA	normotensive students	33	NR	33/0	250mg vs. placebo	45min	+6.2	<.0001	+5.6	<.0001	89	recruitment not sufficiently described; no random allocation
Piters et al. 1985[72]	USA	stable chronic angina patients	17	59±9 (40–74)	17/0	85mg	up to 30min	−3	*ns*	NR	NR	89	recruitment not sufficiently described; randomisation procedure not sufficiently described; investigator blinding not sufficiently described
						170mg		2	*ns*	NR	NR		
Lane et al. 1983[73]	USA	normotensives	10	18–20	10/0	250mg vs. placebo	45min	+6.7	<.05	+6.1	<.01	86	recruitment not described; randomisation procedure not explained; blinding procedures not explained
Robertson et al. 1978[74]	USA	normotensives	9	21–30	6/3	4mg/kg	NR	+7.5	<.05	+10.9	<.05	68	recruitment not described; participants not sufficiently described; random allocation not apparent; no blinding of investigators

Supplementary Table 4. Studies examining the effect of acute nicotine use or exposure

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Farsalinos et al. 2014[75]	Greece	electronic cigarette users	40	35±5	36/4	7min ad lib electronic cigarette use	after smoking	+0.7	*ns*	+3.0	<.001	92	no control group (e.g. sham smoking)
		heavy smokers	36	36±5	32/4	1 cigarette		+6.6	<.001	+4.4	<.001		
Seet et al. 2012[76]	Singapore	adult smokers	119	32±11	99/ 20	1 cigarette	60min after smoking	+2.2	*ns*	+0.5	*ns*	95	cigarette type was not standardised (participant chose cigarette)
Shaikh et al. 2012[77]	UAE	Arabian pipe smokers	97	21.29± 2.25	97/0	Arabian pipe	immediately after final puff	+12.13	.0001	−0.57	*ns*	82	before and after only (no control group); recruitment not adequately described
Kubozono et al. 2011[78]	Japan	adult smokers	10	35±6	10/0	1 cigarette for 5min	immediately after smoking	+4	.09	+2	<.05	81	recruitment not described; small sample size; no control group (e.g. sham smoking)
Kasikcioglu et al. 2008[79]	Turkey	healthy smokers	10	37.1±7.6 (30–48)	10/0	2 cigarettes (nicotine content not reported)	immediately after smoking	+23	<.001	+6	.05	80	recruitment not described; small sample size; no control group (e.g. sham smoking)
Rhee et al. 2007[80]	South Korea	adult normotensive smokers	30	39±6	30/0	1 cigarette (0.9mg nicotine)	5min after smoking	+5	<.01	+6	<.01	83	no control group (e.g. sham smoking); recruitment not sufficiently described
							10min after smoking	+3	<.005	+4	<.01		
							15min after smoking	+2	*ns*	+3	<.01		
		adult hypertensive smokers	22	42±11	22/0		5min after smoking	+6	<.005	+8	<.01		
							10min after smoking	+4	<.05	+5	<.01		
							15min after smoking	+3	<.05	+3	<.01		
Zamir et al. 2006[81]	Ireland	normotensive smokers	6	22–25	3/3	1 cigarette (1.2mg nicotine)	during smoking and up to 20min after	+20	<.01	+11	<.01	77	recruitment procedure not sufficiently described; random allocation not reported; observers not blinded; small sample size
Najem et al. 2006[82]	Belgium	regular smokers	16	26±7	8/8	4mg nicotine tablet vs. placebo	40–60min after ingestion	+5	<.05	+6	<.01	82	small sample size, recruitment not specified
Vanderkaay et al. 2006[83]	USA	smokers	46	19.37 ± 1.95 (18–26)	31/ 15	12h of nicotine patch vs. placebo	after 12 hours of patch	+2.81	<.05	+2.29	<.05	93	randomisation procedure not adequately described; investigator blinding not adequately described
Wolk et al. 2005[84]	USA/Poland	healthy habitual snuff tobacco users	16	21±1	16/0	2 x 1.5g snuff tobacco	after 30min of snuff chewing	+12	<.001	+7	<.001	86	small sample size; recruitment not specified; investigator blinding procedure not adequately described
Vlachopolous et al. 2004[85]	Greece	normotensive smokers	12	32±4	12/0	1 hour of cigar smoking	up to 60min of smoking and 60min after smoking	+10	<.05	no effect	*ns*	83	small sample size; recruitment not described; randomisation procedure not described
Ijzerman et al. 2003[86]	The Netherlands	healthy smokers	12	26±6.2	9/3	1 cigarette (1.0mg nicotine)	20–30min after smoking	+6.2	<.05	+3	*ns*	83	randomisation procedure not sufficiently described; small sample size

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Mahmud et al. 2003[87]	Ireland	nonsmokers	17	22±4	8/9	1 cigarette (1.2mg nicotine)	5min after smoking	~+8	<.001 (*F*-test)	~+6	<.001 (*F*-test)	75	recruitment not described; allocation to control (sham-smoking) group not described; only small subset participated in sham smoking; results not reported in adequate detail, data only presented in figure
							10min after smoking	~+5		~+4			
							15min after smoking	~+2		~+4			
		smokers	11	22±4	6/5		5min after smoking	~+9	<.001 (*F*-test)	~+5	<.001 (*F*-test)		
							10min after smoking	~+4		~+4			
							15min after smoking	~+4		~+2			
Malson et al. 2002[88]	USA	adult smokers	12	22 (19–26)	3/9	unfiltered bidi cigarette (4.0mg nicotine)	immediately after smoking	+6.7	*ns*	+7.5	*ns*	95	small sample size
						conventional cigarette (13mg nicotine)		+5.4	*ns*	+7.3	<.025		
Halimi et al. 2000[89]	France	healthy nonsmokers	10	26±4	NR	nicotine gum (4mg nicotine)	during to 60min of chewing	+7	<.05	+8	<.05	71	recruitment not sufficiently described; participants not adequately described; small sample size; randomisation procedure not sufficiently described; investigators not blinded; participants not blinded
Freestone et al. 1995[90]	UK	untreated hypertensives	8	40±3.6	6/2	2 cigarettes (3.4mg nicotine)	15min after smoking	+10	NR	+8	NR	82	small sample size, recruitment not specified, results lacking detail
		treated hypertensives	8	57±4.6	5/3	2 cigarettes (3.4mg nicotine)		+10	NR	+8	NR		
Efstratopoulos et al. 1993[91]	Greece	normotensive smokers	20	26–47	12/8	1 cigarette (1.1mg nicotine) every 20min for 1 hour	during smoking period	+4.8	<.01	+3.47	<.01	82	recruitment procedure not described; no control group (e.g. sham smoking)
		hypertensive smokers	18	40–50	10/8			+15	<.01	+10.5	<.01		
Kool et al. 1993[92]	The Netherlands	smokers	12	37 (25–55)	9/3	1 cigarette (1.3mg nicotine)	immediately after smoking	+6	<.001	+4	<.001	86	recruitment not described; no control group (e.g. sham smoking)
Brunel et al. 1992[93]	France	normotensive nonsmokers	6	26±5 (19–36)	6/0	2 cigarettes (2.68mg nicotine)	10min after smoking	+10	<.001	+7	<.001	73	recruitment not described; small sample size; order of conditions (sham smoking and tobacco smoking) not controlled
Groppelli et al. 1992[94]	Italy	smokers (20+ per day)	10	33.4±1.3 (25–45)	NR	4 cigarettes over one hour	60min of smoking	+20.8	<.01	+7.4	<.01	82	inadequate sample size, recruitment not specified, results lacking detail
Kyriakides et al. 1992[95]	Greece	coronary heart disease patients	20	(29–67)	19/1	1 cigarette (1.35mg nicotine)	immediately after smoking	+14	.005	+10	.006	95	recruitment not adequately described
		healthy adults	20	(23–63)	20/0			+25	<.0001	+7	.01		

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Ray et al. 1986[70]	USA	regular smokers and coffee drinkers	9	NR	6/3	1 cigarette	1–10min after smoking	+3.9	<.05	+11.5	<.05	86	small sample size, participants not described adequately
Benowitz et al. 1984[96]	USA	adult smokers	10	39 (21–63)	6/4	high nicotine cigarette (2.5mg nicotine)	5min after smoking	+9.9	<.05	+4.8	*ns*	86	small sample size, recruitment not specified
						low nicotine cigarette (0.4mg nicotine)		+2.1	*ns*	+1.9	*ns*		
						usual cigarette (unknown nicotine content)		+10.1	<.05	+7.7	<.05		
Pijpers et al. 1984[97]	The Netherlands	pregnant smokers	9	NR	0/9	1 cigarette (1.0mg nicotine)	5min after smoking	+4.8	<.05	+4.4	*ns*	83	recruitment not adequately described; participants not adequately described; randomisation procedure not sufficiently described; small sample size
							10min after smoking	+3.5	<.05	+2.9	*ns*		
							15min after smoking	+3.5	<.05	+1.5	*ns*		
							20min after smoking	+1.6	*ns*	+0.8	*ns*		
							25min after smoking	+0.4	*ns*	+0.8	*ns*		
							30min after smoking	+1.2	*ns*	−1.2	*ns*		
Rabinowitz et al. 1979[98]	USA	adult volunteers	16	(18–35)	10/6	10 puffs of high nicotine cigarette (2.5mg nicotine)	within 2min of last puff	+11	<.001	+9	<.001	82	recruitment not sufficiently described; randomisation procedure not sufficiently described; small sample size
						10 puffs of low nicotine cigarette (0<0.02mg nicotine)		+5	<.001	+6	<.001		
Diamond et al. 1971[99]	USA	nonsmokers	10	(19–44)	8/12	4cm of 1 cigarette (2.22mg nicotine)	immediately after smoking	+5.4	*ns*	+4.9	*ns*	82	recruitment procedure not described; no control group (e.g. sham smoking)
		moderate smokers	10					−5.6	*ns*	+3.4	*ns*		
		heavy smokers	10					+8.1	<.001	+7.4	<.005		
Yarlioglues et al. 2010[100]	Turkey	healthy nonsmokers	39	26±5	0/30	passive smoking	after 30min of exposure	+22	<.05	+18	<.05	82	recruitment not sufficiently described; no control group without smoke exposure (only before and after)
Argacha et al. 2008[101]	Belgium	healthy nonsmokers	11	24.6±3	11/0	1 hour passive exposure to tobacco smoke	during and immediately after exposure	no effect	*ns*	no effect	*ns*	79	recruitment procedure not described; investigators not blinded; randomisation procedure not sufficiently described
Flouris et al. 2008[102]	Greece	male adults	14	26.46 ±4.4	14/0	1 hour passive smoking exposure	5min after exposure	+3.13	*ns*	+1.33	*ns*	96	recruitment procedure not sufficiently described
		female adults	14		0/14			+0.07	*ns*	−0.67	*ns*		

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Dosage	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Mahmud et al. 2004[103]	Ireland	normotensive nonsmokers (male)	10	26±1.6	10/0	1 hour passive exposure to 15 cigarettes (1.2mg nicotine each)	after 15min of exposure	+0.6	*ns*	−0.1	*ns*	83	recruitment not described; random allocation to control vs. experimental condition not reported
							after 30min of exposure	+9.5	<.01	+3.5	*ns*		
							after 60min of exposure	+13.0	<.01	+8.7	*ns*		
		normotensive nonsmokers (female)	11	26±1.6	0/11		after 15min of exposure	+1.6	*ns*	−1.4	*ns*		
							after 30min of exposure	+0.2	*ns*	−4.9	*ns*		
							after 60min of exposure	−0.3	*ns*	−4.0	*ns*		

Supplementary Table 5. Studies examining the effect of bladder distension

Reference	Country	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Amount ingested	Measurement period	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Choi et al. 2011[104]	South Korea	middleaged normotensive women	172	54.5±9.9	0/172	Full bladder confirmed with ultrasound	Mean 7.0±3.4 hours after previous urination vs. directly after voiding bladder	+4.2	<.001	+2.8	<.001	100	no major limitations
Fagius et al. 1989[105]	Finland	normotensives	16	26 (21–39)	9/7	Mean 950mL water ingested	Urge to empty bladder irresistible vs. before ingestion	+15	<.001	+10	<.001	85	recruitment method not described; small sample size
Scultéty et al. 1971[106]	Hungary	asymptomatic volunteers	10	(21–56)	NR	1200mL of water in 30min	Maximum up to 60min after ingestion vs. before ingestion	+33	<.01	+18.5	<.001	80	recruitment method not described; participants not sufficiently described; small sample size

Supplementary Table 6. Studies examining the effect of cold exposure

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Temperature comparisons	Duration of exposure	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Greaney et al. 2014[107]	USA	NR	NR	young adults	11	23±1	6/5	34.0°C vs. 30.5°C skin temp	~30min cooling process	Finapres and Cardiocap automated devices	+5	<.05	+7	<.05	69	recruitment procedure not described; small sample size; no randomisation of order to control for potential order effect; investigators not blind
				older adults	12	60±2	7/5				+14	<.05	+6	<.05		
Hintsala et al. 2014[108]	Finland	NR	NR	hypertensives	41	60.4±2.8	41/0	18°C vs.−10°C	15min	Schiller BP 200 Plus (oscillometric)	+32	<.05	+13	<.05	81	no randomisation of condition order to control for potential order effect
				normotensive controls	20	60.2±3.6	20/0				+28	<.001	+11	<.001		
Koutnik et al. 2014[109]	USA	NR	NR	healthy young adults	20	(18–35)	20/0	24°C vs. 4°C	30min	Omron HEM-705CP (oscillometric)	+12	<.01	+14	<.01	85	recruitment procedure not sufficiently described; randomisation procedure not sufficiently described; investigators not blind
Zhang et al. 2014[110]	China	NR	NR	cardiovascular patients	9	(40–49)	15/15	minimum weather temp of 16.2°C vs. minimum weather temp of 8.8°C	cold air weather event lasted 41 hours	standard mercury	+11	<.05	NR	NR	77	study design led to difficult control for confounding; small sample sizes; results not reported in sufficient detail
				cardiovascular patients	9	(50–59)					+13	<.05	NR	NR		
				cardiovascular patients	12	(60–70)					+11	<.05	NR	NR		
				healthy volunteers	11	(40–49)	24/16				+6	*ns*	NR	NR		
				healthy volunteers	14	(50–59)					+9	*ns*	NR	NR		
				healthy volunteers	15	(60–70)					+8	*ns*	NR	NR		
Korhonen et al. 2006[111]	Finland	Physician	1	healthy adult volunteers	20	25.0± 3.2	20/0	28°C vs. 10°C	120min	NR	+19	<.01	+17	<.01	77	recruitment procedure not sufficiently described; no randomisation of order of conditions to control for order effects; investigators not blinded
Komulainen et al. 2004[112]	Finland	NR	NR	hypertensives	7	30±9	NR	18°C vs. −15°C (with winter clothing)	15min	Meditech ABPM-02 (oscillometric)	+23	NR	+17	NR	65	recruitment not described; participants not sufficiently described; small sample size; order of conditions not randomised to control for order effects; investigators not blind

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Temperature comparisons	Duration of exposure	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Komulainen et al. 2000[113]	Finland	NR	NR	hypertensives	10	27±8	8/2	18°C vs. −15°C (with winter clothing)	15min	Meditech ABPM-02 (oscillometric)	+27 (peak)	<.001	+21 (peak)	<.001	77	small sample size; order of conditions not randomised to control for order effects; investigators not blind to
				normotensives	12	24±3	7/5				+26 (peak)	<.001	+23 (peak)	<.001		
Kawahara et al. 1989[114]	Japan	NR	NR	healthy volunteers	10	33.3±5.3	10/0	12.2°C vs. 24.4°C room temperature	180min	unspecified automated	+14.3	<.05	+14.8	<.001	75	recruitment not specified; no randomisation to control for order effects; small sample size
Scriven et al. 1984[115]	UK	NR	NR	healthy volunteers	6	27±4	6/0	exposed to 4–5°C vs. under blankets in same temperature	5min	Roche Arteriosonde	+6	<.05	+4	<.05	65	recruitment not specified; observers not blind; small sample size; order not randomised
									10min		+9	<.02	+5	*ns*		
									15min		+10	<.01	+7	<.01		
									20min		+12	<.01	+7	<.05		
									25min		+11	<.01	+8	<.01		
									30min		+11	<.01	+9	<.01		

Supplementary Table 7. Studies examining the effect of measuring blood pressure from a paretic arm

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Device	SBP difference (mmHg)	Sig.	DBP difference (mmHg)	Sig.	Study quality (%)	Major limitations
Dewar et al. 1992[116]	UK	NR	NR	stroke patients	103	77 (55–95)	38/65	3	random-zero mercury	−1.1	*ns*	−1.1	*ns*	92	investigators not blinded
Yagi et al. 1986[117]	Japan	NR	NR	stroke patients	47	58±2	NR	≥3	Takeda UA-254	+2	.01	+5	.001	71	recruitment not specified; participant description insufficient; observers not blind

Supplementary Table 8. Studies examining the white-coat effect

Reference	Country	Observers	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Comparison	Baseline device	Observer device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Schmieder et al. 2014[120]	Germany	Physicians	hypertensives	2722	64	1489/ 1233	daytime ambulatory vs. office	standard German ambulatory devices	standard German oscillometric devices	+5.2	NR	+2.6	NR	90	no significance testing on white-coat effect
Agarwal et al. 2013[121]	USA	NR	Type-2 diabetics	187	59.1±9.9	122/65	daytime ambulatory vs. clinic	Spacelabs 90207	Omron HEM-705CP	+10.4	NR	+3.7	NR	90	no significance testing on white-coat effect
Saladini et al. 2012[122]	Italy	doctor	normotensives	73	29.5±9.1	63/10	baseline rest period vs. doctor visit	Finapres Finometer	Finapres Finometer	+12.1	NR	+5.9	NR	90	no significance testing on white-coat effect
Yoon et al. 2012[123]	South Korea	nurses	treated hypertensive outpatients	1087	57±10	522/ 565	home vs. clinic	Omron HEM-747	Omron HEM-747	+7.8	NR	+3.8	NR	90	no significance testing on white-coat effect
		doctors								+9.8	NR	+3.8	NR		
		doctors	patients not at goal BP	64						+35	NR	+9	NR		
O'Shaughnessy et al. 2011[124]	Ireland	NR	hypertensives	80	55.1±16.7	45/35	awake vs. office	VSM Medtech BpTRU	Welch Allyn Vital Signs Monitor	+10.1	<.001	+2.8	.02	100	no major limitations
Sabater-Hernández et al. 2011[125]	Spain	pharmacist	community pharmacy visitors	169	56.4±10.6	68/101	daytime ambulatory vs. community pharmacy	Spacelabs 90207-5Q	Omron M10-IT	−0.4	*ns*	+3.4	<.05	100	no major limitations
							home measurement vs. community pharmacy	Omron M10-IT	Omron M10-IT	+1.2	*ns*	+0.1	*ns*		
Scherpbier-de Haan et al. 2011[126]	The Netherlands	NR	general patients	83	62.1±10.7	32/51	rest vs. doctor-visit	IEM Mobil-O-Graph NG	IEM Mobil-O-Graph NG	+7.6	<.05	+2.5	<.05	100	no major limitations
Sendra-Lillo et al. 2011[127]	Spain	doctors	treated hypertensives	70	61.8±12.4	39/31	home vs. clinic	Omron M10-IT	Omron M10-IT	+13.3	<.05	+2.4	*ns*	100	no major limitations
		pharmacists					home vs. pharmacy	Omron M10-IT	Omron M10-IT	+1.4	*ns*	−1.1	ns		
Pierdomenico et al. 2008[128]	Italy	physician	patients with prehypertension	471	50±15	209/ 262	daytime ambulatory vs. clinic	Spacelabs 90207	standard mercury	+5	NR	−2	NR	90	no significance testing on white-coat effect
			patients with masked hypertension	120	50±16	68/52				+3	NR	−3	NR		

Reference	Country	Observers	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Comparison	Baseline device	Observer device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Blanco et al. 2006[129]	Spain	physician	men	132	73.4±6.3	132/0	daytime ambulatory vs. office	Spacelabs 90207	standard mercury	+13	NR	+5	NR	90	no significance testing on white-coat effect
			women	160	71.9±5.3	0/160				+20	NR	+9	NR		
Gerin et al. 2006[130]	USA	doctors	normotensives	101	46.7±14.0	28/73	awake ambulatory vs. office	Spacelabs 90207	standard mercury	−6.1	NR	−1	NR	86	recruitment method information insufficient; no significance testing on white-coat effect
			unmedicated hypertensives	52	60.8±11.6	43/9				+6.6	NR	+4.9	NR		
Niiranen et al. 2006[131]	Finland	nurses	normotensives	918	56.4±8.5	395/ 523	home vs. office	Omron HEM-722C	standard mercury	+7.7	NR	+3.4	NR	90	no significance testing on white-coat effect
			treated hypertensives	464	53.7±7.6	203/ 261				+7.3	NR	+2.1	NR		
			untreated hypertensives	669	57.4±8.8	354/ 315				+12.7	NR	+5.8	NR		
Botomino et al. 2005[132]	Switzerland	NR	medicated and unmedicated patients	50	53.7±14.0 (27–83)	21/29	home vs. pharmacy	Ambulatory	standard mercury	+4.6	NR	+2.9	NR	91	recruitment information insufficient; participant information insufficient
Goldstein et al. 2004[133]	USA	NR	older men	65	overall 66.4±5.8	65/0	daytime ambulatory vs. clinic	Suntech Accutracker II	standard mercury	−4.6	NR	+0.3	NR	90	no significance testing on white-coat effect
			older women	92		0/92				−7.9	NR	−3.4	NR		
Stergiou et al. 2004[134]	Greece	NR	untreated hypertensives	138	55.9±9.6	NR	awake ambulatory vs. office	SpaceLabs 90207	standard mercury	+5.2	NR	+3.5	NR	90	no significance testing on white-coat effect
			treated hypertensives	138		NR				+3.4	NR	+1.7	NR		
Tachibana et al. 2004[135]	Japan	physician	population sample of >50 year olds	101	66.7±5.2	14/87	home vs. office	unspecified automated device	Omron HEM-705CP	+3.7	NR	+2.1	NR	90	no significance testing on white-coat effect
Tsai et al. 2003[136]	Taiwan	nurses	white-coat hypertensives	12	47.5±11.2	NR	awake ambulatory vs. office	unspecified ambulatory monitor	SpaceLabs automated oscillometric	+9.4	NR	NR	NR	86	recruitment method not described; no significance testing on white-coat effect
			non-white-coat hypertensives	15	38.5±12.1	NR				−0.57	NR	NR	NR		
			reverse white-coat effects	14	42.6±11.7	NR				−8.5	NR	NR	NR		

Reference	Country	Observers	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Comparison	Baseline device	Observer device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Jumabay et al. 2002[137]	Japan, China	NR	healthy elderly	100	male: 68±2.0; female: 67±2.0	66/34	daytime ambulatory vs. office	A&D TM-2421	manual sphyg	+1	NR	+1	NR	90	no significance testing on white-coat effect
			healthy longevous	103	male: 95±6.00; female: 93±3.0	66/37				+3	NR	+4	NR		
			healthy centenarians	33	male: 104±5.0; female: 104±3.0	25/8				+2	NR	+6	NR		
Matsuoka et al. 2002[138]	Japan	doctors	male normotensives	13	20.5±2.8	13/0	daytime ambulatory vs. office	A&D TM2421	standard auscultatory	+2.2	NR	+9	NR	90	no significance testing on white-coat effect
			female normotensives	20	19.8±2.0	0/20				−1.1	NR	+5.5	NR		
			male hypertensives	11	19.6±2.2	11/0				+9.5	NR	+2.7	NR		
			female hypertensives	9	20.4±2.6	0/9				+6.2	NR	+13.1	NR		
Munakata et al. 2002[139]	Japan	NR	normotensives	75	54±2	31/44	rest in clinic vs. doctor presence	Finapres 2300	Finapres 2300	+15	<.001	+21	<.001	100	no major limitations
Silveira et al. 2002[140]	Spain	NR	untreated white-coat hypertensives	57	46±2	27/30	daytime ambulatory vs. office	SpaceLabs 90207	Omron 705CP	+17.7	NR	+9.5	NR	90	no significance testing on white-coat effect
			treated white-coat hypertensives	31	49±3	15/16				+18.9	NR	+10.1	NR		
			untreated hypertensives	50	48±2	22/28				+9.8	NR	+2.1	NR		
			treated hypertensives	65	51±3	27/38				+13.1	NR	+3.9	NR		
Steffen et al. 2001[141]	USA	NR	white adults	77	33±6	49/28	awake ambulatory vs. office	SunTech AccuTracker II	standard mercury	−5	NR	+2	NR	90	no significance testing on white-coat effect
			black adults	78	34±6	34/44				−6	NR	0	NR		
Björklund et al. 2000[142]	Sweden	NR	population sample	1060	med = 71 (69.4–74.1)	1060/0	daytime ambulatory vs. office	Suntech Accutracker II	standard mercury	+6	NR	+4	NR	90	no significance testing on white-coat effect

Reference	Country	Observers	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Comparison	Baseline device	Observer device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Guzzetti et al. 2000[143]	UK	NR	Afro-Caribbean patients	26	45±2	18/6	awake ambulatory vs. office	Spacelabs 90207	Sentron (automated)	+15	NR	+2	NR	86	recruitment method information insufficient; no significance testing on white-coat effect
			white patients	26	46±2	20/6				+18	NR	+3	NR		
Khattar et al. 2000[144]	UK	NR	Afro-Caribbean patients	54	46.8±9.1	29/25	daytime ambulatory vs. clinic	intra-arterial	intra-arterial	+4.3	NR	+6.1	NR	90	no significance testing on white-coat effect
			white patients	528	52.2±10.9	327/201				+9.7	NR	+8	NR		
			south Asian	106	46.3±9.0	83/23				−0.7	NR	+3.2	NR		
Kuznetsova et al. 2000[145]	Russia, Belgium	NR	normotensives	108	40.6±1.5	50/58	daytime ambulatory vs. office	Spacelabs 90202	manual sphyg.	−5.7	<.001	−0.1	*ns*	100	no major limitations
			hypertensives	54		22/32				+17.1	<.001	+13.1	<.001		
Schettini et al. 2000[146]	Uruguay	physician	women	145	20–29	0/145	daytime ambulatory vs. clinic	Spacelabs 90207	Omron HEM-705CP	−5	NR	+1	NR	90	significance values not sufficiently reported
				166	30–39	0/166				−4	NR	+2	NR		
				193	40–49	0/193				−1	NR	+4	NR		
				178	50–59	0/178				+4	NR	+5	NR		
				151	60–69	0/151				+12	NR	+6	NR		
				80	>=70	0/80				+15	NR	+3	NR		
			men	112	20–29	112/0				−1	NR	0	NR		
				141	30–39	141/0				0	NR	0	NR		
				146	40–49	146/0				+5	NR	+2	NR		
				109	50–59	109/0				+6	NR	+2	NR		
				92	60–69	92/0				+13	NR	+4	NR		
				60	>=70	60/0				+13	NR	+2	NR		
Stergiou et al. 2000[147]	Greece	trained physician	untreated population sample	143	18–37	240/ 322	home measurement vs. clinic	Omron HEM-705CP	standard mercury	−0.2	*ns*	+2.0	<.01	100	no major limitations
				145	38–52					+0.2	*ns*	+3.6	<.001		
				131	53–64					−1.2	*ns*	+0.7	*ns*		
				143	>64					−4.1	<.001	−1.6	<.01		
Lambrechtsen et al. 1998[148]	Denmark	physicians	male students	269	20.2 (19–21)	269/0	daytime ambulatory vs. clinic	Welch Allyn QuietTrak	Hawksley Random-zeros	+6.5	<.05	+1.6	<.05	100	no major limitations
			female students	290	20.1 (19–21)	0/290				+3.0	<.05	−4.1	<.05		
Mayet et al. 1998[149]	UK	NR	white hypertensives	46	43±1.9	24/22	daytime ambulatory vs. clinic	Spacelabs 90207	NR	+15	NR	+1	NR	90	no significance testing on white-coat effect
			black hypertensives	46	44±2.0	24/22				+13	NR	+1	NR		

Reference	Country	Observers	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Comparison	Baseline device	Observer device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Chase et al. 1997[150]	USA	NR	Anglo females	28	22.0±0.70	0/28	awake ambulatory vs. office	Spacelabs 90207	standard mercury	−7	NR	−3	NR	86	participants not sufficiently described; no significance testing on white-coat effect
			African-American females	16	20.6±0.86	0/16				−5	NR	+2	NR		
			African-American males	20	20.7±1.03	20/0				−6	NR	+0	NR		
			Anglo males	22	22.9±0.80	22/0				−6	NR	+4	NR		
			Hispanic females	18	21.1±0.79	0/18				−1	NR	+3	NR		
			Hispanic males	14	20.6±0.91	14/0				−2	NR	+8	NR		
Sega et al. 1997[151]	Italy	trained physicians	males from population sample	128	69.0±2.3	128/0	daytime ambulatory vs. clinic	Spacelabs 90207	standard mercury	+20.1	<.01	+5.3	<.01	100	no major limitations
							self-measured vs. clinic	Philips HP 5331		+7.8	<.01	+4.7	<.01		
			females from population sample	120		0/120	daytime ambulatory vs. clinic	Spacelabs 90207		+19.9	<.01	+6.9	<.01		
							self-measured vs. clinic	Philips HP 5331		+11.7	<.01	+5.4	<.01		
Acharya et al. 1996[152]	UK	NR	black women	25	NR	0/25	daytime ambulatory vs. clinic	intra-arterial	not specified	+1	NR	+2	NR	90	no significance testing on white-coat effect
			black men	31	NR	31/0				−2	NR	+3	NR		
			white women	218	NR	0/218				+9	NR	+6	NR		
			white men	344	NR	344/0				+4	NR	+6	NR		
			Asian women	22	NR	0/22				−3	NR	+3	NR		
			Asian men	83	NR	83/0				−4	NR	+1	NR		
Nystrom et al. 1996[153]	Sweden	trained nurses	untreated population sample (men)	47	20–44	47/0	daytime ambulatory vs. clinic	Spacelabs 90202 and Spacelabs 90207	standard mercury	−6	NR	−1	NR	90	no significance testing on white-coat effect
				53	45–70	53/0				0	NR	+2	NR		
			untreated population sample (women)	48	20–44	0/48				−7	NR	−2	NR		
				52	45–70	0/52				+1	NR	+1	NR		
Shapiro et al. 1996[154]	USA	NR	European-American college students	85	20.7±2.4	72/70	awake ambulatory vs. laboratory	Suntech Accutracker II	NR	−4.5	NR	0	NR	86	participant demographics not sufficiently described; no significance testing on white-coat effect
			African-American college students	57	21.4±2.7					−1.6	NR	+1.9	NR		

Reference	Country	Observers	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Comparison	Baseline device	Observer device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Mancia et al. 1995[155]	Italy	trained physicians	population sample	1438	46.4±11.9	708/730	daytime ambulatory vs. clinic	Spacelabs 90207	standard mercury	+4.4	<.001	+3.6	<.001	100	no major limitations
							home self-measurement vs. clinic	Philips HP 5331		+8.2	<.001	+7.6	<.001		
Verdecchia et al. 1995[156]	Italy	NR	normotensives	178	43±13	78/100	awake ambulatory vs. office	SpaceLabs 5200; 90202; 90207	standard mercury	+2	NR	0	NR	90	no significance testing on white-coat effect
			white-coat hypertensives	252	49±12	124/128				+20	NR	+13	NR		
			Hypertensives	1081	51±12	519/562				+12	NR	+5	NR		
Gretler et al. 1994[157]	USA	trained technicians	black males	122	50.1±1.3 (22–78)	122/0	awake ambulatory vs. office	Suntech Accutracker II	standard mercury	+9.7	NR	+12.5	NR	86	recruitment method not sufficiently described; no significance testing on white-coat effect
			black females	153	50.4±1.3 (20–78)	0/153				+16.4	NR	+12.5	NR		
			white males	140	48.0±1.3 (20–78)	140/0				+4.6	NR	+9.1	NR		
			white females	106	49.6±1.5 (23–79)	0/106				+17.7	NR	+13.2	NR		
Pearce et al. 1992[158]	USA	NR	treated hypertensive patients	16	62.7±5.9	16/0	awake ambulatory vs. clinic	Spacelabs 90207	random-zero mercury sphyg	−12.7	<.001	−8.2	<.001	100	no major limitations
			normotensive/ untreated patients	34		34/0				−10.9	<.001	−7.6	<.001		
Enstrom et al. 1991[159]	Sweden	Physician	normotensives	48	50.3±7.9	48/0	daytime ambulatory vs. clinic	Spacelabs ICR 5200	standard mercury	+3	NR	0	NR	90	no significance testing on white-coat effect
			borderline hypertensives	81	52.8±8.1	81/0				+15	NR	+3	NR		
			hypertensives	35	52.8±7.7	35/0				+23	NR	+6	NR		
Mancia et al. 1983[160]	Italy	Doctors	hospital patients	48	17–67	25/23	doctor-absent vs. doctor-present	intra-arterial	intra-arterial	+26.7	<.001	+14.9	<.001	95	recruitment method not sufficiently described; participants not sufficiently described

Device-related sources of inaccuracy

Supplementary Table 9A. Studies examining the accuracy of mercury devices (vs. invasive criterion)

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of Measurements	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
standard mercury	Ochiai et al. 1997[167]	Japan	trained physicians	NR	untreated hypertensives and normotensives	34	48 (30–73)	24/10	1 set per patient	−10.6 (−26.8; +5.6)	<.001	+3.7 (−9.3; +16.7)	<.01	100	no major limitations
standard mercury	White et al. 1990[168]	USA, Norway	clinicians	2	hypertensive patients	58	NR	NR	NR	−4 (−22; +14)	<.05	+4 (−2; +10)	<.05	96	DBP effect value not stated; participants not sufficiently described
standard mercury	Cohn et al. 1967[169]	USA	NR	NR	shock patients	39	NR	NR	NR	−33.1 (NR)	NR	NR (NR)	NR	82	participants not described; results not reported in sufficient detail
Hawksley Random Zero Manometer (mercury)	Bos et al. 1992[170]	The Netherlands	trained observers	2	surgery patients; healthy volunteers	76	NR	NR	NR	−6.0 (−19.0; +7.0)	<.05	+1.9 (−9.3; +13.1)	<.05	88	no mention of blinding observers; participants not sufficiently described

Supplementary Table 9B. Studies examining the accuracy of aneroid devices (vs. invasive criterion)

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of Measurements	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
McCoy Econosphyg (aneroid)	Araghi et al. 2006[162]	USA	investigator	1	overweight critically ill adults	54	57±3	23/24	NR	−6.7 (−15.3;+1.9)	NR	+11.4 (+6.8;+16.0)	NR	91	no mention whether observer was blinded to invasive measurement
Speidel+Keller aneroid	Turjanmaa et al. 1989[172]	Finland	trained nurse	1	volunteers	24	39.4±4.95 (35–45)	23/1	1 set per patient	−4.0 (−18.88;+10.88)	<.015	+2.0 (−7.38; +11.38)	*ns*	100	no major limitations
Welch Allyn DuraShock DS44	Ribezzo et al. 2014[171]	Italy	critical care nurses	3	ICU patients	50	(18–92)	18/31	2 per patient	−9.7 (−36.8; +17.4)	<.0001	+5.1 (−8.8; +19.1)	<.0001	96	only partial blinding of investigators

Supplementary Table 9C. Studies examining the accuracy of aneroid devices (vs. non-invasive criterion)

Device model	Reference	Country	Observers	*N*	Partici-pants	*N*	Age in y *M±SD* (*range*)	M/F	No of measures	Criterion device	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
Heine Gamma XXL-LF	Dorigatti et al. 2007[177]	Italy	NR	NR	volunteers	33	51±21	18/15	NR	standard mercury	−0.3 (−7.7;+7.1)	NR	−1 (−6.2;+4.2)	NR	86	recruitment method not described; participants not sufficiently described
Heine Gamma G7	Dorigatti et al. 2007[177]	Italy	NR	NR	volunteers	33	51±21	18/15	NR	standard mercury	−0.4 (−7.0;+6.2)	NR	−0.5 (−5.7;+4.7)	NR	86	recruitment method not described; participants not sufficiently described
Missouri aneroid	Ferreira et al. 2010[174]	Brazil	trained observers	3	cancer patients	33	57.63±13.03 (31–80)	15/18	14	standard mercury	+0.62 (−8.44;+9.68)	NR	+0.06 (−13.08;+13.2)	NR	100	no major limitations
Prestige Medical CEO-120	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	27	(18–21)	NR	1	standard mercury	+1.85 (−15.23; +18.93)	*ns*	−1.7 (−11.60; +8.20)	<.01	96	participants not sufficiently described
Prestige Medical CEO-120	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	18	(21–24.5)	NR	1	standard mercury	+0.78 (−17.32; +18.88)	*ns*	−2.00 (−17.64; +13.64)	*ns*	96	participants not sufficiently described
Prestige Medical CEO-120	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	16	(24.5–50)	NR	1	standard mercury	+0.88 (−17.06; +18.82)	*ns*	+0.75 (−9.47; +10.97)	*ns*	96	participants not sufficiently described
Prestige Medical CEO-120	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	22	(50–92)	NR	1	standard mercury	−3.45 (−28.45; +21.55)	*ns*	−1.59 (−13.75; +10.57)	*ns*	96	participants not sufficiently described
Welch Allyn Tycos 767 mobile	Saxena et al. 2012[173]	India	experienced observer	1	volunteers	83	(18–40)	NR	2	standard mercury	−3.60 (−13.36; +6.16)	*ns*	−2.34 (−9.56; +4.88)	*ns*	96	participants not sufficiently described
Welch Allyn Tycos 767 mobile	Ma et al. 2009[175]	USA	trained technicians	NR	clinic patients	997	NR	NR	2	standard mercury	−0.8 (−7.2; +5.6)	<.0001	−0.1 (−8.3; +8.1)	*ns*	96	participants not sufficiently described
Welch Allyn Maxi-Stabil 3	Reinders et al. 2003[178]	UK	trained observers	2	hospital staff and patients	85	54±15.7	38/47	NR	standard mercury (sequent.)	−0.6 (−9.8;+8.6)	NR	−1.3 (−8.3;+5.7)	NR	95	recruitment method not sufficiently described
Welch Allyn MaxiStabil 3	Reinders et al. 2003[178]	UK	trained observers	2	hospital staff and patients	85	54±15.7	38/47	NR	standard mercury (simultan.)	−1.3 (−5.7;+3.1)	NR	−1.9 (−7.3;+3.5)	NR	95	recruitment method not sufficiently described
Welch Allyn Vital Signs Monitor 52000	Braam et al. 2002[179]	The Nether-lands	trained observers	2	internal medicine out-patients	85	48±18	31/54	NR	standard mercury	+5.3 (−8.1;+18.7)	NR	NR	NR	100	no major limitations
Welch Allyn Vital Signs Monitor 52000	Braam et al. 2002[179]	The Nether-lands	trained observers	2	internal medicine out-patients	85	51±16	33/52	NR	standard mercury	NR	NR	+7.5 (−6.7;+21.7)	NR	100	no major limitations

Supplementary Table 9D. Studies examining the accuracy of automated devices (vs. invasive criterion)

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of Measurements	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
A&D UA-213	Ochiai et al. 1997[167]	Japan	trained physicians	NR	untreated hypertensives and normotensives	34	48 (30–73)	24/10	1 set per patient	−8.1 (−27.5; +11.3)	<.01	+1.2 (−16.6; +19.0)	*ns*	100	no major limitations
A&D UA-510	Ochiai et al. 1997[167]	Japan	trained physicians	NR	untreated hypertensives and normotensives	34	48 (30–73)	24/10	1 set per patient	−12.2 (−33.2; +8.8)	<.001	+4.6 (−10.6; +19.8)	<.01	100	no major limitations
Bosch & Sohn Bosotron 2	Weber et al. 1999a[187]	Germany	specially trained observer	1	cardiology patients	33	(32–75)	28/5	4 to 5 per patient	+1.74 (−17.46; +20.94)	NR	+4.87 (−6.36; +16.1)	NR	88	no blinding of investigators
Colin ABPM 630 (auscultatory mode)	White et al. 1990[168]	USA, Norway	clinicians	2	hypertensive patients	58	NR	NR	NR	+2 (−12; +16)	*ns*	0 (−12; +12)	*ns*	96	participants not sufficiently described
Colin ABPM 630 (oscillometric mode)	White et al. 1990[168]	USA, Norway	clinicians	2	hypertensive patients	58	NR	NR	NR	+4 (~−9; ~+17)	<.05	−1 (~−14; ~+12)	*ns*	92	participants not sufficiently described; limits of agreement not reported in text (figure only)
Critikon Dinamap 1846SX	Lehmann et al. 1998[188]	USA	experienced observers	NR	heart catheterization patients	40	57±8	NR	5 per patient	+2.3 (−16.1; +20.7)	NR	+3.3 (−6.1; +12.7)	NR	95	patients not sufficiently described
Datascope Accutorr 1A	Lehmann et al. 1998[188]	USA	experienced observers	NR	heart catheterization patients	40	62±6	NR	5 per patient	+0.6 (−19.2; +20.4)	NR	+0.6 (−19.2; +20.4)	NR	95	patients not sufficiently described
Del Mar Avionics Pressurometer IV	White et al. 1990[168]	USA, Norway	clinicians	2	hypertensive patients	58	NR	NR	NR	+6 (~−13;~+25)	<.05	+2 (~−14; ~+18)	<.01	92	participants not sufficiently described; limits of agreement not reported in text (figure only)
Hewlett Packard 66	Araghi et al. 2006[162]	USA	investigator	1	overweight critically ill adults	54	57±3	23/24	NR	−15.2 (−68.2; +37.7)	NR	−3.7 (−33.0; +25.5)	NR	91	no mention whether observer was blinded to invasive measurement
Novacor Diasys Integra (auscultatory mode)	Muecke et al. 2009[184]	Australia	ICU staff	NR	ICU patients	18	37 ± 14 (21–59)	17/1	150 total pairs per device	−16.9 (−39.5; +5.7)	NR	+5.0 (−13.8; +23.8)	NR	100	no major limitations
Novacor Diasys Integra (oscillometric mode)	Muecke et al. 2009[184]	Australia	ICU staff	NR	ICU patients	18	37 ± 14 (21–59)	17/1	150 total pairs per device	+2.9 (−25.1; +30.9)	NR	+10.7 (−0.3; +21.7)	NR	100	no major limitations
Omron BP8800	Ohte et al. 2007[185]	Japan	NR	NR	patients with suspected CAD	82	64.3±9.4	65/17	1 set per patient	−1.8 (−25.4; +21.8)	NR	+4.5 (−14.4; +23.1)	NR	100	no major limitations
Paramed 9200	Lehmann et al. 1998[188]	USA	experienced observers	NR	heart catheterization patients	40	61 ± 8	NR	5 per patient	−0.7 (−20.1; +18.7)	NR	+4.0 (−11.0; +19.0)	NR	95	patients not sufficiently described
Philips IntelliVue MP70	Ribezzo et al. 2014[171]	Italy	critical care nurses	3	ICU patients	50	(18–92)	18/31	2 per patient	−10.8 (−40.1; +18.5)	<.0001	+3.6 (−8.2; +15.4)	<.0001	96	only partial blinding of investigators
SpaceLabs 90202	White et al. 1990[168]	USA, Norway	clinicians	2	hypertensive patients	58	NR	NR	NR	−2 (~−21;~+17)	<.001	+3 (~−11; ~+17)	<.001	92	participants not sufficiently described; limits of agreement not reported in text (figure only)

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of Measurements	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
SpaceLabs 90209	Manios et al. 2007[186]	Greece	NR	NR	hyperacute stroke patients	51	73.8±9.5	30/21	Average over 24 hours	−9.7 (~−31.4;~+12)	<.001	+5.6 (~−8;~+19)	<.001	92	limits of agreement not reported in text (figure only)
Suntech Medical Accutracker II	Muecke et al. 2009[184]	Australia	ICU staff	NR	ICU patients	18	37 ± 14 (21–59)	17/1	150 pairs per device	−10.6 (−36.4; +15.2)	NR	+1.6 (−13.4; +16.6)	NR	100	no major limitations
Suntech Medical Accutracker II	White et al. 1990[168]	USA, Norway	clinicians	2	hypertensive patients	58	NR	NR	NR	+1 (−19; +11)	*ns*	−3 (−11; +5)	<.05	96	participants not sufficiently described
Suntech Medical Oscar 2	Muecke et al. 2009[184]	Australia	ICU staff	NR	ICU patients	18	37 ± 14 (21–59)	17/1	150 pairs per device	−9.2 (−34.0; +15.6)	NR	+7.0 (−3.0; +17.0)	NR	100	no major limitations
Takeda TM-2420	Russell et al. 1989[189]	Australia	unspecified observers	2	ischaemic heart disease patients	26	NR	NR	5 sets per patient	−23 (−47; +1)	<.05	+5 (−3; +13)	<.05	95	participants not sufficiently described
unspecified automated devices	McMahon et al. 2012[182]	UK	NR	NR	critical care patients	56	NR	NR	NR	−3.7 (−37.3; +30.0)	NR	NR	NR	85	participants not described; DBP effect not reported
unspecified automated devices	Mireles et al. 2009[183]	USA	NR	NR	adult neurosurgery patients	11	NR	NR	301 total pairs	+3.8 (−9.8; +17.4)	*ns*	+2.4 (−7.6; +12.4)	*ns*	95	small sample size of participants, however, large number of measurements

Supplementary Table 9E. Studies examining the accuracy of automated device models (vs. non-invasive criterion)

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of measures	Criterion device model	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
A&D UA-213	Ochiai et al. 1997[167]	Japan	trained physicians	NR	untreated hypertensives; normotensives	29; 5	47.4 (18–71); 48.0 (30–73)	20/9; 4/1	1	standard mercury	+1.5 (−7.0; +10.0)	NR	−1.5 (−15.0; +12.0)	NR	100	no major limitations
A&D UA-510	Ochiai et al. 1997[167]	Japan	trained physicians	NR	untreated hypertensives; normotensives	29; 5	47.4 (18–71); 48.0 (30–73)	20/9; 4/1	1	standard mercury	−3.95(−18.5; +10.6)	NR	+3.9 (−10.0; +17.8)	NR	100	no major limitations
A&D UA-751	Jamieson et al. 1990a[222]	UK	experienced observer	1	hypertensive and non-hypertensives grp 1	50	NR	NR	2	Hawksley random zero	−0.9 (−13.1;+11.3)	*ns*	+1.3 (−8.9;+11.5)	*ns*	82	method of recruitment not described; participant demographics not described
A&D UA-751	Jamieson et al. 1990a[222]	UK	experienced observer	1	hypertensive and non-hypertensives grp 2	50	NR	NR	2	Hawksley random zero	+0.2 (−9;+9.4)	*ns*	−0.3 (−11.1;+10.5)	*ns*	82	method of recruitment not described; participant demographics not described
A&D UA-751	Jamieson et al. 1990a[222]	UK	experienced observer	1	hypertensive and non-hypertensives grp 3	50	NR	NR	2	Hawksley random zero	+0.6 (−19;+20.2)	*ns*	−0.6 (−6.4;+5.2)	*ns*	82	method of recruitment not described; participant demographics not described
A&D UA-751	Jamieson et al. 1990a[222]	UK	experienced observer	1	hypertensive and non-hypertensives grp 4	50	NR	NR	2	Hawksley random zero	+1.4 (−14.2;+17)	*ns*	−0.2 (−6.8;+6.4)	*ns*	82	method of recruitment not described; participant demographics not described
A&D UA-767PC	Lim et al. 2014[190]	South Korea	trained nurses	2	volunteers	454	50.7±15.4 (20–95)	214/240	3	standard mercury	−1.9 (−15.9; +12.1)	NR	−3.1 (−14.1; +7.9)	NR	100	no major limitations
A&D UA-777	Shahriari et al. 2003[204]	Denmark	investigator	1	outpatients	72	NR	NR	NR	standard mercury	−5.5 (−22.1;+11.1)	NR	−6.8 (−20.4;+6.8)	NR	100	no major limitations
Accutor Plus Monitor	White et al. 2003[205]	USA	experienced observers	2	patients	109	47±13	56/53	5	standard mercury	+0.13 (−14.89; +15.15)	NR	−2.54 (−12.96; +7.88)	NR	100	no major limitations
BpTRU	Lamarre-Cliché et al. 2011[194]	Canada	qualified nurse	NR	hypertensives	101	58.2± 11.5	54/47	3 for criterion; 5 for test	standard mercury	−1.45 (−16.63; +13.73)	ns	−0.84 (−16.02; +14.34)	ns	100	no major limitations
BpTRU	Graves et al. 2003[203]	USA	nurses	NR	BP monitored patients	106	62.8±13.3	57/49	3	Welch Allyn Tycos aneroid	−1.8 (−12;+8.4)	<.001	+4.8 (−5.4; +15.0)	<.001	100	no major limitations
BpTRU BPM-100	Wright et al. 2001[213]	Canada	NR	NR	BP clinic patients	85	43.1±15.6 (18–83)	44/41	NR	standard mercury	−0.16 (−10.42;+10.1)	NR	−1.41 (−10.75;+7.93)	NR	100	no major limitations
BpTRU BPM-100beta	Mattu et al. 2001[211]	Canada	nurses	2	adults	85	43.1±15.6 (18–83)	44/41	5	standard mercury	−0.62 (−14.54;+13.3)	NR	−1.48 (−11.08;+8.12)	NR	100	no major limitations

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of measures	Criterion device model	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
Copal digital UA251	Malatino et al. 1988[226]	UK	investigator	1	patients	67	(35–78)	34/33	1	Hawksley random-zero	+0.45 (−5.35; +6.25)	NR	+0.95 (−4.25; +6.15)	NR	100	no major limitations
Critikon Dinamap 845XT	Jenner et al. 1988[225]	Australia	experienced nurses	NR	normotensive hospital staff, hypertension clinic outpatients	31	NR	13/20	12	standard mercury	+0.75 (−10.3; +11.8)	NR	+3.9 (−12.3; +20.1)	NR	100	no major limitations
Critikon Dinamap 845	Bassein et al. 1985[227]	Italy	physician	NR	hypertensive patients	30	NR	NR	1	standard mercury	−3 (−21; +15)	<.05	−8 (−22; +6)	<.05	92	participants not described
Critikon Dinamap 1846 XT	Beaubien et al. 2002[206]	Canada	trained observers	2	hospital patients	70	61.7±18.5; (19–90)	38/32	3	standard mercury	0 (−16;+16)	NR	−3 (−18.4;+12.4)	NR	100	no major limitations
Critikon Dinamap 1846SX	Kuo et al. 2000[215]	Taiwan	technician	1	diabetic patients and offspring	105	50.6±14.5	45/60	2	standard mercury	+2.03 (−8.57;+12.63)	NR	+0.61 (−8.23;+9.45)	NR	95	method of recruitment not sufficiently described
Critikon Dinamap 8100	Heinemann et al. 2008[197]	Australia	nurses	2	hospital patients	126	66.36 (19–93)	62/64	NR	Manual	−3.13 (−27.53;+21.27)	.005	−5.22 (−26.02;+15.58)	<.001	100	no major limitations
Critikon Dinamap 8100 (model 8120)	Bern et al. 2007[198]	USA	trained staff	7	medical in-patients	126	59.4±18.1 (21–95)	50/76	1	Welch Allyn aneroid (Model 7670-01)	+2.2 (−14.6; +19.0)	.003	−1.1 (−19.1; +16.9)	ns	100	no major limitations
Critikon Dinamap 8100	Cienki et al. 2004[202]	USA	trained personnel	NR	triage patients	170	40±14	NR	1	standard mercury	+3.8 (−18.2;+25.8)	<.05	−6.6 (−24.6;+11.4)	<.05	100	no major limitations
Critikon Dinamap 8100	Coe et al. 2002[207]	New Zealand	nurses	NR	day surgery patients	200	46.3±16.8	102/98	1	standard mercury	+8.38 (−14.3; +31.1)	<.001	−1.68 (−19.8;+16.5)	<.01	100	no major limitations
Critikon Dinamap 8100	Goonasekera et al. 1995[220]	UK	unspecified observer	1	younger adult patients	NR	NR	NR	3	Hawksley random zero	+6.45 (−5.69;+18.59)	NR	−10.77 (−27.09;+5.55)	NR	73	method of recruitment not described; participants not described; unknown sample size
Gambro-Dasco Blood Pressure Monitor	Cavalcanti et al. 2000[214]	Italy	nurses	2	volunteers	92	(<20 to >60)	52/40	3	standard mercury	+0.2 (−13.4;+13.8)	NR	−0.4 (−10.4;+9.6)	NR	100	no major limitations
IVAC 4200	Shuler et al. 1998[218]	USA	certified investigators	4	hospital patients	145	63±13	143/2	NR	standard mercury	+1.59 (−13.21; +16.39)	<.05	+1.98 (−12.92;+16.88)	<.05	100	no major limitations

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of measures	Criterion device model	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
MicroLife BP 3BTO-A	Cuckson et al. 2002[208]	UK	trained observers	2	hospital staff and patients	85	median=44 (22–90)	34/51	NR	standard mercury	−1.7 (−16.5;+13.1)	NR	−2.1 (−14.7;+10.5)	NR	100	no major limitations
Nissei D-175 Digital Monitor	Dawson et al. 1989[223]	UK	NR	NR	pregnant women	41	NR	0/41	~3	London School of Hygiene blind-reading mercury	+16.53 (−9.13;+42.19)	<.001	+9.71 (−16.97;+36.39)	<.001	95	participants not sufficiently described
Omron HEM-705 CP	Vera-Cala et al. 2011[195]	Columbia / USA	trained observers	2	random sample	1084	42.5	372/712	2	standard mercury	+1.8 (−10.1; +13.7)	<.001	−1.6 (−12.8 +9.6)	<.001	100	no major limitations
Omron HEM-711AC	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	27	(19–21)	NR	1	standard mercury	+5.70 (−14.42; +25.82)	<.01	+0.93 (−11.81; +13.67)	ns	96	participants not sufficiently described
Omron HEM-711AC	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	18	(21–24.5)	NR	1	standard mercury	+8.33 (−4.85; +21.51)	<.001	+3.39 (−7.95; +14.73)	<.05	96	participants not sufficiently described
Omron HEM-711AC	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	16	(24.5–50)	NR	1	standard mercury	+6.94 (−12.30; +26.18)	<.05	+3.13 (−12.67; +18.93)	ns	96	participants not sufficiently described
Omron HEM-711AC	Nelson et al. 2008[176]	USA	trained investigators	4	volunteers	22	(51–90)	NR	1	standard mercury	+15.50 (−20.4; +51.4)	<.01	+3.05 (−19.47; +25.57)	ns	96	participants not sufficiently described
Omron HEM-737	Anwar et al. 1998[216]	USA	NR	2	general population	90	58±16 (24–84)	38/52	NR	standard mercury	−0.76 (−13.86; +12.34)	NR	−1.0 (−11.1;+9.1)	NR	95	observers not described
Omron HEM-759-E (705IT)	Coleman et al. 2006[199]	UK	hospital staff	3 or 4	outpatients	85	47.2±14.9 (24–85)	38/47	NR	standard mercury	+0.6 (−11.4;+12.6)	NR	−3.15 (−16.35;+10.05)	NR	100	no major limitations
Omron HEM-907XL	Ostchega et al. 2010[196]	USA	trained observers	8	younger adults	134	(20–49)	NR	3	standard mercury	−0.74 (−12.62; +11.14)	*ns*	−1.87 (−15.01; +11.27)	<.0001	100	no major limitations
Omron HEM-907XL	Ostchega et al. 2010[196]	USA	trained observers	8	older adults	283	(>50)	NR	3	standard mercury	−2.37 (−15.05; +10.31)	<.0001	−1.50 (−13.38; +10.38)	<.0001	100	no major limitations
Omron HEM-907	Semret et al. 2005[200]	USA	trained observers	2	hemodialysis patients	20	56±12.2	18/2	56 pairs total	standard mercury	+2.7 (−15.9; +21.3)	.049	+0.4 (−13.6; +14.4)	*ns*	96	control participants not sufficiently described
Omron HEM-907	Semret et al. 2005[200]	USA	trained observers	2	normal controls	20	31±8.5	NR	56 pairs total	standard mercury	+4.3 (−13.5; +22.1)	<.0001	+0.6 (−16.8; +18.0)	*ns*	96	control participants not sufficiently described
Omron HEM-907	El Assaad et al. 2002[209]	France	trained physicians	2	NR	33	51±13.9	19/14	NR	standard mercury	−1 (−15;+13)	NR	−5 (−17;+7)	NR	91	method of recruitment not described

Device model	Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	No of measures	Criterion device model	SBP mean bias (95% LoA) in mmHg	Sig.	DBP mean bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
Omron HEM-907	White et al. 2001[212]	USA	NR	NR	patients	100	56±17	45/55	3	standard mercury	+1.56 (−7.28;+10.4)	NR	+3.49 (−5.73;+12.71)	NR	91	method of recruitment not described
Omron HEM-5001	Eguchi et al. 2011[193]	USA	doctors	NR	hypertensives	56	60±14	32/24	3	standard mercury	+2.4 (−5.4;+10.2)	<.001	−1.3 (−9.3;+6.7)	.02	59	method of recruitment not sufficiently described
Omron M4	Shahriari et al. 2003[204]	Denmark	investigator	1	outpatients	72	NR	NR	NR	standard mercury	−5.5 (−22.5;+11.5)	NR	−3 (−14.8;+8.8)	NR	100	no major limitations
Omron-MIT	Golara et al. 2002[210]	UK	experienced observers	2	patients	85	Med=51 (21–88)	49/36	3 or 4	standard mercury	+2.1 (−12.1;+16.3)	NR	+2.4 (−9.2;+14)	NR	91	method of recruitment not described
Pharma-Smart PS-2000	Alpert et al. 2004[201]	USA	clinicians	2	Volunteers	85	40 (18–74)	44/41	5	standard mercury	+0.07 (−13.9; +14.07)	NR	−0.3 (−13.5; +12.9)	NR	100	no major limitations
Spacelab Ultraview SL	Collins et al. 2013[191]	USA	nurses	4	hospitalised patients	57	79.77 (42–97)	34/23	1	Welch Allyn mounted aneroid sphyg	+2.00 (−12.66;+16.6)	.043	+6.18 (−9.94;+22.3)	<.001	100	no major limitations
Takeda UA-731	Cartwright et al. 1996[219]	UK	trained observers	2	general population	71	med=59	0/71	NR	standard mercury	−3.7 (−16.7;+9.3)	<.05	−2.3 (−11.3;+6.7)	<.05	100	no major limitations
Takeda UA-731	Cartwright et al. 1996[219]	UK	trained observers	2	general population	71	med=50	0/71	NR	standard mercury	−1.8 (−14.2;+10.6)	<.05	−1.8 (−10.6;+7)	<.05	100	no major limitations
Takeda UA-751	Johnston et al. 1989[224]	UK	experimenter	NR	volunteers	10	(20–50)	NR	3	Hawksley random-zero mercury	+0.85 (−7.1; +8.8)	*ns*	+1.7 (−5.5; +8.9)	*ns*	91	recruitment not described
Terumo ES-H51	Imai et al. 1994[221]	Japan	doctors	2	subjects	64	57.6±10.4; (25–76)	26/64	NR	standard mercury	+0.7 (−5.1;+6.5)	NR	+0.3 (−4.9;+5.5)	NR	91	method of recruitment not described
Terumo ES-H51	Kwek et al. 1998[217]	Singapore	registrar-grade clinicians	2	antenatal unit patients	87	30 (19–41)	0/87	3	standard mercury	−3.4 (−8.6; +1.8)	NR	−2.0 (−5.8; +1.8)	NR	100	no major limitations
WatchBP Office	Ishikawa et al. 2012[192]	Greece, Japan, USA	doctors, nurses	NR	hypertensives	75	56.1±13.8	41/34	3	standard mercury	−1.6 (~−17.2+14.0	ns	−0.8 (~−8.5; ~+10.1)	ns	86	method of recruitment not sufficiently described; did not control for confounds

Supplementary Table 10A. Studies examining the calibration accuracy of mercury devices in clinical use

Reference	Country	*N* (devices tested)	Criterion device	Accuracy threshold in mmHg	Test Pressure(s) in mmHg	Devices exceeding threshold (%)	Study quality (%)	Major limitations
A'Court et al. 2011[229]	UK	75	Scandmed pressure meter 950831-2; Omron PA-350	±3	50–250	5	100	no major limitations
de Greeff et al. 2010[230]	UK	18	DPI 610 electronic gauge	±3	0–200	6	95	inadequate sample size
Coleman et al. 2005[231]	UK	83	DPI 610 electronic gauge	±3	0–250	13.3	100	no major limitations
Shah et al. 2004[232]	Australia	238	accurate mercury sphygmomanometer	±4	0	0	100	no major limitations
					80	0.4		
					90	0.4		
					100	0.4		
					140	0.4		
					150	0.4		
					160	0.4		
Waugh et al. 2002[233]	UK	36	mercury column	±3	varying pressures	28	100	no major limitations
Ashworth et al. 2001[234]	UK	130	accurate mercury sphygmomanometer	±3	50–220	2.3	100	no major limitations
Knight et al. 2001[235]	UK	356	Unspecified calibration device	±3	0–250	61.8	100	no major limitations
Jones et al. 1987[236]	USA	8	accurate mercury sphygmomanometer	±4	60–240	0	95	inadequate sample size
Burke et al. 1982[237]	Ireland	160	accurate mercury sphygmomanometer	±3	90	6	95	only tested at one pressure level
Shaw et al. 1979[238]	UK	32	accurate mercury sphygmomanometer	±3	60–150	34.4	89	selection of devices not described; description of devices not sufficient

Supplementary Table 10B. Studies examining the calibration accuracy of aneroid devices in clinical use

Reference	Country	*N* (devices tested)	Criterion device	Accuracy threshold in mmHg	Test Pressure(s) in mmHg	Devices exceeding threshold (%)	Study quality (%)	Major limitations
A'Court et al. 2011[229]	UK	191	Scandmed pressure meter 950831-2; Omron PA-350	±3	50–250	22	100	no major limitations
Amoore et al. 2010[239]	UK, France	102	standard mercury or Veri-Cal 6508636	±3	50–250	17.7	100	no major limitations
de Greeff et al. 2010[230]	UK	62	DPI 610 electronic gauge	±3	0–200	31	100	no major limitations
Cozanitis et al. 2010[240]	Finland	819	standard mercury	±3	0	2.8	100	no major limitations
		819			60	31.1		
		819			100	31.7		
		819			150	44		
		820			200	43.4		
Moore et al. 2008[241]	USA	282	standard mercury	±3	50–250	33	100	no major limitations
Coleman et al. 2005[231]	UK	62	DPI 610 electronic gauge	±3	0–250	53.2	100	no major limitations
Shah et al. 2004[232]	Australia	166	standard mercury	±4	0	3.9	100	no major limitations
					80	9.6		
					90	9.6		
					100	9.6		
					140	9.6		
					150	9.0		
					160	9.0		
Waugh et al. 2002[233]	UK	39	mercury column	±3	varying pressures	42	100	no major limitations
Ashworth et al. 2001[234]	UK	61	standard mercury	±3	50–220	14.8	100	no major limitations
Canzanello et al. 2001[242]	USA	283	standard mercury	±4	60–240	1.4	100	no major limitations
Knight et al. 2001[235]	UK	116	unspecified calibration device	±3	0–250	38.8	100	no major limitations
Yarows et al. 2001[243]	USA	136	Biometer DPM-III	±3	50	0	100	no major limitations
					80	1.5		
					90	2.9		
					100	3.7		
					120	3.7		
					140	3.7		
					150	4.4		
					200	3.7		
					250	2.9		
Başak et al. 1999[244]	Turkey	100	standard mercury	±3	60–240	40	94	description of devices not sufficient
Mion et al. 1998[245]	Brazil	204	standard mercury	±3	0–250	58	100	no major limitations
Knaus et al. 1991[246]	USA	230	standard mercury	±3	50–250	34.8	100	no major limitations
Jones et al. 1987[236]	USA	125	standard mercury	±4	60–240	34.4	100	no major limitations
Burke et al. 1982[237]	Ireland	50	standard mercury	±3	90	42	95	only tested at one pressure level
Bowman et al. 1981[247]	UK	23	standard mercury	±5	50–200	69.7	78	inadequate sample size; description of devices not sufficient

Supplementary Table 10C. Studies examining the calibration accuracy of automated devices in clinical use

Reference	Country	*N* (devices tested)	Criterion device	Accuracy threshold in mmHg	Test Pressure(s) in mmHg	Devices exceeding threshold (%)	Study quality (%)	Major limitations
A'Court et al. 2011[229]	UK	308	Scandmed pressure meter 950831-2; Omron PA-350	±3	50–250	21	100	no major limitations
de Greeff et al. 2010[230]	UK	47	DPI 610 electronic gauge	±3	0–200	26	100	no major limitations
Coleman et al. 2005[231]	UK	134	DPI 610 electronic gauge	±3	0–250	4.5	100	no major limitations

Procedure-related sources of inaccuracy

Supplementary Table 11. Studies examining the effect of rest period

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Length of rest	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Nikolic et al. 2014[249]	Australia	NR	NR	treated hypertensives	250	64±8	130/120	5min vs. 10min	Omron HEM-907	+4.2	<.001	+1.8	0.041	100	no major limitations
Sala et al. 2006[250]	Italy	trained operators	2	untreated hypertensives	55	46.3±1.7 (19–71)	35/20	0min vs. 16min	standard mercury	+11.6	<.05	+4.3	<.05	92	investigators not blinded

Supplementary Table 12. Studies examining the effect of body position (vs. sitting)

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Posture comparison (arm position)	Device(s)	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Eşer et al. 2007[252]	Turkey	researcher	1	healthy students	157	18–24	0/ 157	NR	standing (arm supported at heart level) v. sitting (arm on heart level chair rest)	Bosomat; Boso oscillomat	−2.9	<.05	+0.3	*ns*	77	randomisation not described; observers not blinded; did not control for order effects
									supine (not specified) v. sitting (arm on heart level chair rest)		+5.1	<.05	+1.2	*ns*		
Zachariah et al. 1990[251]	USA	NR	NR	hypertensive clinic patients	168	51±9 (30–67)	116/ 52	2	standing (not specified) v. sitting (not specified)	standard mercury	+5	<.0001	+7	<.0001	73	recruitment not detailed; order not randomised; observers not blinded
									supine (not specified) v. sitting (not specified)		+2	*ns*	−5	<.0001		
Cicolini et al. 2011[253]	Italy	researcher	1	diagnosed hypertensives	250	66.3±13.4	111/ 139	NR	supine (arm on heart level pillow) v. sitting (arm on heart level table)	Omron HEM-7221-E; Omron M2 Basic	+2.02	<.001	−2.88	<.001	92	observers not blinded
Cicolini et al. 2010[254]	Italy	researcher	1	male patients	79	23.7±4.8 (19–44)	79/0	NR	supine (arm on heart level pillow) v. sitting (arm on heart level table)	Omron HEM-4011C-E Mod. M1 Plus	−10.7	<.001	−13	<.001	73	recruitment not detailed; randomisation not described, observers not blinded; did not control for order effects
			1	female patients	146		0/146				−9.2	<.001	−13.4	<.001		
Netea et al. 2003[255]	The Nether-lands	NR	NR	hypertensives	57	55±12	29/26	3	supine (arm on heart level pillow) v. sitting (arm supported at heart level)	Hawksley random zero	+9.5	<.001	+4.8	<.001	88	recruitment information lacked detail; observers not blinded
										Bosomat	+5.6	<.001	+5.1	<.001		
Netea et al. 1998[256]	The Nether-lands	NR	NR	hypertensives, normotensives	245	NR	118/ 127	3	supine (arm on bed) v. sitting (arm on armrest)	Hawksley random zero	0	*ns*	−5.2	.0001	88	recruitment information lacked detail; observers not blinded
										Bosomat; Boso oscillomat	−1	*ns*	−2.4	.0001		

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Posture comparison (arm position)	Device(s)	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Terént et al. 1994[257]	Sweden	researcher	1	male population sample	188	NR	188/0	3	supine (arm on heart level pillow) v. sitting (arm on armrest at heart level)	standard mercury	+7.9	NR	NR	*ns*	85	observers not blinded
				female population sample	213	NR	0/213	3	supine (arm on heart level pillow) v. sitting (arm on armrest at heart level)	standard mercury	+8.2	NR	NR	*ns*		
Jamieson et al. 1990b[258]	UK, USA	NR	NR	hypertensives, normotensives	166	56 (23–79)	NR	NR	supine (not specified) v. sitting (not specified)	Copal UA-251	+2.6	.02	−2.7	.001	88	participant information insufficient; observers not blinded
Carel et al. 1983[259]	Israel	NR	NR	hypertensives, normotensives	365	54.9±33	365/0	3	supine (not specified) v. sitting (arm on thigh, cuff at heart level)	Kenz Model 45	+2.1	<.01	+6.4	<.001	77	order not randomised; observers not blinded

Supplementary Table 13. Studies examining the effect of legs crossed at knees

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Pinar et al. 2010a[260]	Turkey	Experienced nurses	3	patients	283	58.1±11.8 (30–85)	121/162	2	standard mercury	+14.89	<.001	+10.81	<.001	85	partial blinding; no random allocation
Adiyaman et al. 2007[261]	The Netherlands	trained investigator	1	treated hypertensives, treated diabetics, normotensives	111	52± 17 (19–80)	51/60	2–3	Omron 705CP	+5.7	<.05	+1.4	<.05	85	recruitment not sufficiently described; random allocation process not described; observers not blinded
Pinar et al. 2004[262]	Turkey	trained nurse	1	hypertensives (treated and untreated)	238	56.1±8.7	138/10	1	standard mercury	+8.49	<.001	+5.71	<.001	81	no random allocation; observers were not blinded
Avvampato et al. 2001[263]	USA	nurse researcher	1	treated hypertensives	89	25–89	70–80% /20–30%	1	Vital-Check Vital Signs Measurement System 4200	+1.9	*ns*	+0.6	*ns*	92	observers not blinded
Keele-Smith et al. 2001[264]	USA, Mexico	registered nurses	6	seniors (49 treated for hypertension, 54 not)	103	70.8 (50–92)	51/52	1	unspecified aneroid devices	+5.92	<.001	+2.98	<.001	92	observers not blinded
Foster-Fitzpatrick et al. 1999[265]	USA	clinical nurses	2	hypertensives	84	31–81	84/0	1	Vital-Check Vital Signs Measurement System 4200	+9.07	<.0001	+3.96	<.0001	85	no random allocation; observers not blinded
Peters et al. 1999[266]	Canada	doctor (blinded)	1	normotensives	50	25.1±3.7	23/27	1	Omron HEM-706	+2.5	<.05	−0.1	*ns*	96	random allocation process not described
				hypertensives	53	53.4± 12.7	22/31			+8.1	<.05	+4.5	<.05		

Supplementary Table 14. Studies examining the effect of unsupported back

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Cushman et al. 1990[267]	USA	nurse and doctor's assistant	2	hypertensives	48	(33–87)	48/0	4	random-zero mercury	+1.3	*ns*	+6.5	.0001	80	recruitment not sufficiently described; randomisation process not described; observers not blinded; did not control for other differences between table and chair, such as height and comfort

Supplementary Table 15. Studies examining the effect of unsupported arm

Reference	Country	Observers	N	Participants	N	Age in y M±SD (range)	M/F	Measures per condition	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Familoni et al. 2005[268]	Nigeria	physicians	2	hypertensive patients	123	58.77±10.3	68/55	2	standard mercury	+4.87	.028	+4.81	.006	85	order of positions was not randomised; potentially confounded by order effect
				normotensive volunteers	120	58.68±9.51	65/55			+7.61	*ns*	+2.83	*ns*		
Beck et al. 1983[269]	USA	NR	NR	normotensives	48	27.2 (20–40)	24/24	3	unspecified automated device	+0.7	*ns*	+2.7	<.01	85	recruitment method not sufficiently described; randomisation procedure not sufficiently described; observers not blinded
Silverberg et al. 1977[270]	Israel	NR	NR	normal adults	20	(25–60)	10/10	3	Arteriosonde 1217-Roche	+2.2	*ns*	+1.0	ns	65	recruitment not described; participants not sufficiently described; no randomisation; no control for order effects; observers not blinded

Supplementary Table 16. Studies examining the effect of arm height

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Body posture	Arm position	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Adiyaman et al. 2006[271]	The Netherlands	NR	NR	majority hypertensives	128	54±15 (21–79)	65/ 63	3	sitting	desk level	Omron CP 705	+6	<.05	+5.8	<.05	88	recruitment method not sufficiently described; observers not blinded
										chair support		+9.3	<.05	+9.4	<.05		
Hemingway et al. 2004[272]	USA	investigators	NR	patients	100	44 (18–88)	55/ 45	1	sitting	arm parallel to torso	automated E100	+8.8	<.05	+10.1	<.05	77	no order randomisation; observers not blind; order effects not controlled for
									standing			+9.5	<.05	+10.2	<.05		
Mourad et al. 2003[273]	Australia	trained observer	1	normotensives	25	36±14	10/ 15	NR	sitting	arm dependent by side	Omron 705CP	+10	<.01	+10	<.01	85	recruitment not described; observers not blinded
											standard mercury	+8	<.01	+7	<.01		
									standing		Omron 705CP	+12	<.01	+10	<.01		
											standard mercury	+7	<.01	+5	<.01		
				hypertensives	26	56±20	10/ 16	NR	sitting		Omron 705CP	+18	<.01	+9	<.01		
											standard mercury	+23	<.01	+10	<.01		
									standing		Omron 705CP	+12	<.01	+11	<.01		
											standard mercury	+21	<.01	+10	<.01		
Netea et al. 2003[255]	The Netherlands	trained observer	1	NR	25	52.9±16.5	11/ 14	3	supine	arm on bed (left arm)	Bosomat	+1.9	*ns*	+2.8	<.0001	88	recruitment not sufficiently described; observers not blinded
										arm on bed (right arm)		+4.6	.0009	+3.9	<.0001		
Netea et al. 1999[274]	The Netherlands	trained observer	1	volunteers	69	54.1±16.0	39/ 30	3	sitting	arm-rest of chair	random-zero mercury	+9.7	<.0001	+10.8	<.0001	85	recruitment not described; observers not blinded
											Bosomat	+7.3	<.0001	+8.3	<.0001		

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Body posture	Arm position	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Parr et al. 1988[275]	UK	general physicians	36	general physicians	36	NR	NR	4	sitting	arm dependent by side	standard mercury; random zero mercury	+4	NR	+4	NR	73	participants and observers were same; participants not sufficiently described; randomisation procedure not sufficiently described; observers not blinded
Mariotti et al. 1987[276]	Italy	doctor	1	outpatients	181	44.7±12.5	103/76	1	standing	arm dependent by side	standard mercury	+8.2	<.001	+8.8	<.001	88	recruitment method not sufficiently described; observers not blinded
Waal-Manning et al. 1987[277]	New Zealand	Trained technicians	3	hypertensive patients (men)	108	59±12	108/0	NR	standing	arm dependent by side	Southern Computers Automanometer	+10.6	<.001	+9.4	<.001	100	no major limitations
				hypertensive patients (women)	132	57±14	132/0	NR				+6.0	<.001	+7.4	<.001		
Webster et al. 1984[278]	UK	nurses	NR	hypertensive patients	20	NR	NR	NR	sitting	arm dependent by side	Remler recording system	+18	NR	+14	NR	77	recruitment not described; participants not described
									standing			+22	NR	+18	NR		
			NR	normotensives	20	NR	NR	NR	sitting			+20	NR	+20	NR		
									standing			+27	NR	+27	NR		
			2	outpatients	90	NR	NR	NR	sitting		Hawksley random zero	+11	<.001	+12	<.001		
Beck et al. 1983[269]	USA	NR	NR	normotensives	48	27.2 (20–40)	24/24	3	sitting	arm-rest of chair	Unspecified automated device	+3.7	<.01	+4.6	<.01	85	recruitment method not sufficiently described; randomisation procedure not sufficiently described; observers not blinded

Supplementary Table 17. Studies examining the effect of cuff size

Ref.	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Arm cicumf. in cm *M±SD* (*range*)	Measures per cuff size	Criterion cuff size in cm (WxL)	Test cuff size in cm (WxL) (vs. criterion)	Device	SBP bias (95% LoA) in mmg	Sig.	DBP bias (95% LoA) in mmHg	Sig.	Study quality (%)	Major limitations
Fonseca-Reyes et al. 2009[279]	Mexico	trained observer	1	bodybuilders with arm circumf. >33cm	144	31.9 ±9.2	139/5	37.0 ±2.2	2	16 width	12 width (smaller)	standard mercury	+8.2 (−12.6; +29.0)	<.0001	+1.62 (−13; +16.3)	*ns*	100	no major limitations
				bodybuilders with arm circumf. <33cm	49	29.6 ±6.8	17/32	29.1 ±2.6	2	12 width	16 width (larger)	standard mercury	−4.24 (−22.1; +13.6)	*ns*	−2.24 (−12.7; +8.2)	*ns*		
Fonseca-Reyes et al. 2003[280]	Mexico	trained observer	1	patients with arm circumf. >33cm, 30% hypertensive	120	43±13.1	16/104	37.9 ±3.5	1	15.5x31	12.5x26 (smaller)	standard mercury	+7.0 (criteri−on first); +11.2 (comp−arison first)	.001; <.01	+6.1 (criterion first) +6.6 (test first)	<.05; <.01	100	no major limitations
Bakx et al. 1997[281]	The Nether-lands	trained investigator	1	volunteers	130	49 (22–70)	61/69	32.9 (25–40)	3	13x36	13x23 (smaller)	Mercury RZS	+2.08	<.0001	+1.61	<.0001	91	method of recruitment insufficiently described
										13x36	16x23 (larger)	Mercury RZS	−1.45	<.0003	−0.96	<.001		
Iyriboz et al. 1994[282]	USA	NR	2	with arm circumf. >29cm	51	47.65±16.29	44/41	32.49 ±2.57	12	15x33	12x23 (smaller)	standard mercury	+5.41 (−1.17; 11.99)	<.0001	+4.15 (−2.82; +11.05)	<.0001	77	method of recruitment not sufficiently described; participant information insufficiently described; control for confound of cuff order to described
			2	with arm circumf. <29cm	34	52.56 ±27.24		25.80 ±2.26	12	15x33	12x23 (smaller)	standard mercury	+4.05 (−6.05; +14.14)	<.0001	+1.9 (−3.13; +7.21)	<.0001		
Sprafka et al. 1991[283]	USA	trained technicians	NR	men with arm circumf. 24.5–27.0cm	3	25–74	3/0	(24.5–27.0)	2	10x22	9x27 (smaller)	random-zero mercury	+6.0	<.05	+2.7	*ns*	91	sample size of men not sufficient; participants not sufficiently described
										10x22	12x23 (larger)		−3.0	*ns*	−4.7	*ns*		
				men with arm circumf. 27.5–32.0cm	53		53/0	(27.5–32.0)	2	12x23	10x22 (smaller)		+2.2	<.05	+2.0	<.05		
									2	12x23	15x33 (larger)		−3.7	<.05	−4.7	<.05		
				women with arm circumf. 24.5–27.0cm	39		0/39	(24.5–27.0)	2	10x22	9x27 (smaller)		+4.0	<.05	+3.0	<.05		
									2	10x22	12x23 (larger)		−0.05	*ns*	+0.3	*ns*		
				women with arm circumf. 27.5–32.0cm	78		0/78	(27.5–32.0)	2	12x23	10x22 (smaller)		+2.7	<.05	+3.2	<.05		
								(27.5–32.0)	2	12x23	15x33 (larger)		−2.1	<.05	−2.7	<.05		

Supplementary Table 18. Studies examining the effect of cuff placed over clothing

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Pinar et al. 2010b[284]	Turkey	nurses	3	hypertensive patients	258	61.7±11.6 (33–85)	122/136	2	standard mercury	−0.44	*ns*	−0.25	*ns*	73	recruitment not sufficiently described; no random allocation or control for order effects; observers not blinded
Liebl et a 2004[285]	Germany	experienced observer	1	hypertensives and normotensives	201	45.5±23.7	101/100	1	standard mercury	+1.0	*ns*	+0.8	*ns*	96	recruitment not sufficiently described
									Boso Medicus Prestige	+1.1	*ns*	+0.8	*ns*		
Kahan et al. 2003[286]	Israel	physician	1	medical patients	201	46	68/133	3	A&D UA-767	−0.54	*ns*	+0.56	*ns*	81	recruitment not described; random allocation process not described; observers not blinded
Holleman et al. 1993[287]	USA	NR	NR	smokers and medical patients	36	43.8±13.8	21/15	3	Dinamap 1846sx	−1.7	*ns*	−2.2	*ns*	69	recruitment method not specific; did not control for order effect; observers not blinded; small sample size

Supplementary Table 19. Studies examining the effect of placing the stethoscope under the cuff

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Device	SBP Difference in mmHg	Sig.	DBP difference in mmHg	Sig.	Study quality (%)	Major limitations
Weber et al. 1999b[288]	Germany	specifically trained observers	2	normotensives	64	38.7±15.1	32/32	5	standard mercury	+1.6	<.001	−10.6	<.001	92	observers not blinded
				hypertensives	67	44.6±12.9	36/31			+1.0	<.001	−8.4	<.001		
Ljungvall et al. 1991[289]	Sweden	experienced nurses	3	hypertensives	107	(20–76)	67/40	2	standard mercury	+3.1	<.001	−3.5	<.001	85	recruitment not specified; order not randomised

Supplementary Table 20. Studies examining the effect of talking during measurement

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Speech content	Measures per condition	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Zheng et al. 2012[290]	UK	trained observer	1	patients	111	46±16	55/56	counting numbers	3	Accoson Green-light 300	+5.3	<.001	+6.2	<.001	77	recruitment not sufficiently described, random allocation process not described, investigators not blinded, results lacked detail
Le Pailleur et al. 2001[291]	France	doctor	1	hypertensives	64	59±1.50 (25–84)	33/31	stressful (hyper-tension history)	10	Novacor Diasys 200 R	+19	<.0001	+13.3	<.0001	81	recruitment not described sufficiently, random allocation process not described, observers not blinded
								counting numbers			+4	<.0001	+5	<.0001		
Le Pailleur et al. 1996[292]	France	doctor	1	hypertensives	42	57.5±1.94 (19–86)	24/18	stressful (hyper-tension history)	10	Novacor Diasys 200 R	+19	<.0001	+13	<.0001	81	recruitment not described sufficiently, random allocation process not described, observers not blinded
								relaxed (favourite activities etc.)			+12	<.0001	+10	<.0001		
Liehr et al. 1992[293]	USA	research assistant	1	volunteers	109	41.7±10.9 (21–67)	54/55	Non-stressful (daily activities)	2	Dinamap 845	+9	<.001	+9	<.001	92	observers not blinded
Hellmann et al. 1984[294]	USA	NR	NR	non-medicated hypertensives	48	(27–69)	46/2	reading out-loud	3	standard mercury	NR	NR	+8.25	<.01	85	participant characteristics not sufficiently described, observers not blinded
Malinow et al. 1982[295]	USA	experimenter	1	normotensives	20	(21–81)	5/15	described occupation	2	Dinamap 845	+8.4	<.01	+10	<.01	73	no random allocation, observers not blinded, small sample size
				hypertensives	20	(27–63)	12/8				+13.6	<.01	+14.3	<.01		

Supplementary Table 21. Studies examining the effect of using the stethoscope bell (vs. diaphragm)

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	Device	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Kantola et al. 2005[296]	Finland	investigators	2	hospital inpatients	250	NR	122/ 128	NR	standard mercury	+0.1	*ns*	−0.1	*ns*	90	participants not described
Norman et al. 1991[297]	USA	researcher	1	trauma patients	30	55.6 (18–89)	16/14	1	random-zero mercury	−3.8	.024	−2.1	*ns*	100	no major limitations
Byra-Cook et al. 1990[298]	USA	NR	NR	critical care patients; stethoscope on antecubital fossa	50	(18–70)	24/26	3	standard mercury	−0.7	*ns*	+0.1	*ns*	100	no major limitations
				critical care patients; stethoscope on upper arm						−1.4	*ns*	+0.9	*ns*		
Cushman et al. 1990[267]	USA	nurse and doctor	2	hypertensives	48	61.6±10.1 (33–87)	48/0	2	random-zero mercury	+1.2	*ns*	−0.7	*ns*	85	recruitment not described in sufficient detail; randomisation process not described; investigators not blinded
Mauro et al. 1988[299]	USA	researcher	1	younger women	56	20.5 (18–26)	0/56	1	random-zero mercury	+1.54	<.05	−1.61	<.05	100	no major limitations

Supplementary Table 22. Studies examining the effect of pressure placed on the stethoscope head

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Device	Pressure on stethoscope head	SBP effect in mmHg	Sig.	DBP effect in mmHg	Sig.	Study quality (%)	Major limitations
Londe et al. 1984[300]	USA	unspecified	2	hospital staff	30	(25–50)	12/18	standard mercury	10mmHg	−1	*ns*	−9	<.0001	100	no major limitations
									50mmHg	0	*ns*	−15	<.0001		

Supplementary Table 23. Studies examining the effect of fast deflation rate

Reference	Country	Observers	*N*	Participants	*N*	No of measurements	Comparisons	Device	SBP effect (mmHg)	Sig.	DBP effect (mmHg)	Sig.	Study quality (%)	Major limitations
Zheng et al. 2011[301]	UK	trained observers	2	recorded waveforms from 75 people	4725	2 per patient	1x to 7x recorded rate	Accoson Greenlight 300	−2.6 to −7.1	<.05	+2.1 to +6.3	<.05	95	recruitment method not described
Reinders et al. 2006[302]	Netherlands, Australia	NR	NR	antenatal or recently delivered women	98	4 per patient	>5mmHg/s vs. <2mmHg/s	Hawksley random-zero	−9	<.001	+2	*ns*	100	no major limitations
Yong et al. 1987[303]	USA	N/A	N/A	computer simulation	N/A	N/A	5mmHg/s; 3mmHg/s; 3mmHg/heart beat; 2mmHg/heart beat	N/A	−2.4 to −7.1	NR	+2.4 to +7.1	NR	100	no major limitations

Supplementary Table 24. Studies examining the effect of the interval between measurements

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Device	Interval A	Interval B	Measures per condition	SBP difference in mmHg (A−B)	Sig.	DBP difference in mmHg (A−B)	Sig.	Study quality (%)	Major limitations
Myers et al. 2008[304]	Canada	NR	NR	Clinic patients	50	NR	NR	BpTRU	1min	2min	5	+2	*ns*	−1	*ns*	85	participants not sufficiently described
Yarows et al. 2001[305]	USA	NR	NR	normotensives and hypertensives	50	50±17 (18–77)	28/22	Omron HEM-705CP	15s	1min	3	+1.1	*ns*	0.0	*ns*	100	no major limitations
Koehler et al. 2002[306]	Brazil	Investigator	1	clinic patients	92	21–86	16/76	standard mercury	no interval	1min	2	1.33 less variation	.019	0.47 less variation	*ns*	90	smaller sample sizes (less power) for the automated devices cf. mercury
					19	27–82	5/14	Datascope 2NEL				1.86 greater variation	*ns*	0.65 less variation	*ns*		
					32	18–75	9/23	Nihum Seimitsu Sokk DS-91				2.59 greater variation	*ns*	0.7 greater variation	*ns*		

Supplementary Table 25. Studies examining variability between subsequent measurements in single session

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Device	Interval between compared measure-ments	SBP difference in mmHg	Sig.	DBP difference in mmHg	Sig.	Study quality (%)	Major limitations
Stergiou et al. 2000[147]	Greece	trained physician	1	untreated population sample	562	51.2 ±17.2	240/322	standard mercury	2min	+3.3 (first minus third)	<.001	+0.6 (first minus third)	<.01	100	no major limitations
Jamieson et al. 1990b[258]	UK, USA	experienced clinicians	5	hospital patients	163	55 (23–79)	NR	COPAL UA-251	1min	+3.8 (first minus second); 95% LoA = (−17.2;+24.8)	<.01	−0.2 (first minus second); 95% LoA = (−14.2; +13.9)	*ns*	88	participant information insufficient; observers not blinded
Parr et al. 1988[275]	UK	general physicians	36	general physicians	36	NR	NR	Hawksley random-zero; standard mercury	45min	+9 (first minus eighth)	NR	+3 (first minus eighth)	NR	73	participants and observers were same; participants not sufficiently described; randomisation procedure not sufficiently described; observers not blinded
Van Loo et al. 1986[307]	The Nether-lands	trained observers	2	men (population sample)	2889	(20–49)	2889/0	Hawksley random-zero	25min	+10.3 (first minus sixth)	<.05	−0.8 (first minus sixth)	*ns*	100	no major limitations
				women (population sample)	3110	(20–49)	0/3110			+10.4 (first minus sixth)	<.05	0.1 (first minus sixth)	*ns*		
Carel et al. 1983 [259]	Israel	NR	NR	normotensives (sitting)	179	54.9±33	365/0	Kenz Model 45	2min	+1.6 (first minus third)	*ns*	−1.3 (first minus third)	<.01	84	observers not blinded
				normotensives (supine)						+6.8 (first minus third)	*ns*	−0.3 (first minus third)	*ns*		
				borderline hypertensives (sitting)	110					-0.6 (first minus third)	*ns*	−2.0 (first minus third)	<.001		
				borderline hypertensives (supine)						+3.7 (first minus third)	<.001	−0.3 (first minus third)	*ns*		
				hypertensives (sitting)	76					+2.7 (first minus third)	*ns*	−2.4 (first minus third)	<.001		
				hypertensives (supine)						+2.1 (first minus third)	*ns*	−1.8 (first minus third	<.001		
Burstyn et al. 1981[308]	UK	NR	NR	unaccustomed patients	36	22	12/24	Hawksley random-zero	4-5min	+5.2 (first minus third)	<.001	−0.3 (first minus third)	*ns*	68	participant information insufficient; no random allocation; observers not blinded; small sample size; did not control for confound due to no random allocation
				accustomed patients	36	25	15/21			0 (first minus third)	*ns*	−1.3 (first minus third)	*ns*		

Supplementary Table 26. Studies examining the effect of inter-arm variability

Reference	Country	Observers	*N*	Participa-nts	*N*	Age in y *M±SD* (*range*)	M/F	Meas-ures per arm	Method of measures	Device	SBP Difference Right − Left (95% LoA) or absolute difference ±SD in mmHg	Sig.	DBP Difference Right − Left (95% LoA) or absolute difference in ±SD mmHg	Sig.	Study quality (%)	Major limitations
Agarwal et al. 2008[311]	USA	trained nurse	1	clinic patients	421	62.9 ±13.2	401/ 20	3	sequential	Omron HEM-412C	+5.1	<.001	+2.6	<.001	100	no major limitations
Lazar et al. 2008[312]	USA	NR	NR	women in HIV study	335	NR	0/ 335	2	sequential	Critikon Dinamap 1846 SX	|6| ±5	NR	|4| ±3	NR	95	insufficient participant information (age range not stated)
Poon et al. 2008[313]	UK	NR	NR	pregnant women	5435	NR	0/ 5435	NR	simul-taneous	NR	−0.8	*ns*	+0.6	*ns*	82	recruitment procedure not described; insufficient participant information
Stergiou et al. 2008[314]	Greece	Invest-igators	2–3	NR	63	60.5 ±12.9	34/29	3	simul-taneous	Microlife WatchBP Office	−0.01 (−8.41; +8.39)	*ns*	−0.38 (−5.78; +5.02)	*ns*	100	no major limitations
Clark et al. 2007a[315]	UK	Invest-igator	1	patients	247	NR	NR	NR	sequential	standard mercury	+1.6	<.05	−1.4	<.05	91	overall participant information not stated - only in subgroups
Clark et al. 2007b[316]	UK	NR	NR	NR	94	69.6±9.7 (44.5–91.7)	NR	NR	simul-taneous	Dopplex II FD2	|5.9| ±4.9	NR	|4.6| ±3.6	NR	91	participant s not sufficiently described
Eguchi et al. 2007[317]	USA	NR	NR	NR	145	57.7 ±15.8	70/75	NR	simul-taneous	A&D UA767-PC	+1.8	.002	+1.2	<.001	95	recruitment procedure not sufficiently described
								NR	sequential		+3.1	<.001	+1.3	.001		
Arnett et al. 2005[318]	USA	certified tech-nicians	NR	random sample	824	55.6 ±11.2	405/ 419	3	sequential	Critikon Dinamap 1846 SX/P	|4.61| ±4.10	<.001	|2.96| ±2.51	<.001	100	no major limitations
				hypertensive siblings	2195	55.5 ±11.2	865/ 1330				|5.35| ±4.98	<.001	|3.09| ±2.73	<.001		
Karagianni s et al. 2005[319]	Greece	NR	NR	patients, ward visitors, nurses	384	54.0 ±18.3	189/ 195	NR	simul-taneous	Omron HEM-705CP	+1.2 (−8.8;+11.2)	<.0005	+0.4 (−8.0;+8.8)	<.05	95	recruitment procedure not sufficiently described
Kimura et al. 2004[320]	Japan	NR	NR	general population	1090	62.4 ±11.1	388/ 702	NR	simul-taneous	Colin Form PWV/ ABI	|4.9| ± 4.4; −0.6 (−13.8; +12.6)	<.05	|3.7| ± 3.0; +1.1 (−8.3; +10.5)	<.05	100	no major limitations

Reference	Country	Observers	*N*	Participa-nts	*N*	Age in y *M±SD* (*range*)	M/F	Meas-ures per arm	Method of measures	Device	SBP Difference Right − Left (95% LoA) or absolute difference ±SD in mmHg	Sig.	DBP Difference Right − Left (95% LoA) or absolute difference in ±SD mmHg	Sig.	Study quality (%)	Major limitations
Chang et al. 2003[321]	USA	Invest-igator	1	younger volunteers	30	28.3±4.0 (23–35)	8/22	30	simul-taneous	Critikon Dinamap PRO 100	+1.93 (0.51;+3.35)	<.01	+0.02 (−1.18;+1.22)	*ns*	91	recruitment of volunteers not described
				older volunteers	30	71.7 ±8.0 (54–82)	18/12	30	simul-taneous		+0.35 (−0.87;+1.57)	*ns*	+1.16 (+0.28;+2.04)	<.05		
Lane et al. 2002[322]	UK	NR	NR	staff and patients	400	56.3 ±19.7	200/ 200	2	simul-taneous	Omron HEM-705CP	|6.32| ± 6.12; +1.81 (−15.43;+19.05)	<.0001; <.0001	|5.06| ± 6.57; −0.23 (−16.81;+16.35)	<.0001; ns	95	recruitment procedure not sufficiently described
Pesola et al. 2002[323]	USA	NR	NR	hypertensives	100	55.3 ±10.3 (27–78)	33/67	NR	sequen-tial	standard mercury	+1.83	*ns*	+0.69	*ns*	100	no major limitations
Cassidy et al. 2001[324]	UK	un-specified clinicians	>1	patients	237	>16	NR	1	sequen-tial	standard mercury	+4.77 (−8.7;+18.3)	<.05	+3.73 (−16.43;+23.89)	<.05	91	insufficient participant information
Fotherby et al. 1993[325]	UK	NR	NR	young	40	31 (18–48)	8/32	8	simul-taneous	Space-Labs 90207	|3.3|	<.05	|2.7|	<.05	95	recruitment procedure not sufficiently described
				elderly	40	74 (63–85)	14/26				|4.2|	<.05	|3.6|	<.05		

Observer-related sources of inaccuracy

Supplementary Table 27. Studies examining the effect of observer hearing deficit

Reference	Country	Observers	*N*	Hearing loss (dB)	Age in y *M±SD* (*range*)	M/F	SBP effect (95% LoA) in mmHg	Sig.	DBP effect (95% LoA) in mmHg	Sig.	Study Quality (%)	Major limitations
Song et al. 2014[328]	South Korea	trained observers	5	5	NR	NR	−0.11 (−0.69; +0.47)	<.05	+1.05 (−2.81; +1.05)	<.001	82	observer demographics and recruitment not sufficiently described; small sample size
				10			−0.23 (−1.45; +0.99)	<.05	+1.33 (−2.81; +1.33)	<.001		
				15			−0.52 (−2.78; +1.74)	<.01	+2.89 (−4.19; +2.89)	<.001		
				20			−1.36 (−6.68; +3.96)	<.001	+3.88 (−4.18; +3.88)	<.001		
				25			−1.55 (6.97; +3.87)	<.001	+4.32 (−4.1; +4.32)	<.001		

Supplementary Table 28. Studies examining the effect of determining DBP from Korotkoff Phase IV (vs. V)

Reference	Country	Observers	*N*	Participants	*N*	Age in y *M±SD* (*range*)	M/F	Measures per condition	DBP difference in mmHg	Sig	Study Quality (%)	Major limitations
Villar et al. 1989[334]	USA	clinic staff and project coordinator	NR	pregnant women	149	NR	0/149	NR	+12.5	<.001	91	participants not sufficiently described
Folsom et al. 1984[335]	USA	trained observers	NR	men from population sample	2309	(25–74)	2309/0	2	+2.4	NR	95	no overall significance test for mean difference
				women from population sample	2576		0/2576		+1.9	NR		

Supplementary Table 29. Studies examining the prevalence of terminal digit bias for zero

Reference	Country	Observers	*N*	No. of readings evaluated	Device(s)	Prevalence of zero end-digit (SBP)	Prevalence of zero end-digit (DBP)	Study quality (%)	Major limitations
Wang et al. 2015[336]	China	NR	NR	318877	mercury	62.5%	63.5%	94	observers not sufficiently described
Odili et al. 2014[337]	Nigeria	trained observers	2	800	mercury	~27.1%	~27.1%	91	only aggregate bias reported; small sample size of observers
Ayodele et al. 2012[338]	Nigeria	doctors	NR	342	mercury	51.2%	64.3%	94	observers not sufficiently described
		nurses				98.5%	98.5%		
Cienki et al. 2012[339]	USA	emergency medical services personnel	NR	100	various	69%	57%	83	observers not sufficiently described; recruitment not sufficiently described
Jie et al. 2012[340]	China	hospital staff	862	4511	mercury and automated	81.8%	81.2%	100	no major limitations
Lebeau et al. 2011[341]	France	investigators	257	1828	unspecified manual devices	68.8%	74.1%	100	no major limitations
Mengden et al. 2010[342]	24 Countries	NR	NR	23062	manual	32.37%	36.58%	94	observers not sufficiently described
					automated	10.15%	9.67%		
Burnier et al. 2008[343]	Switzerland	doctors	504	2580	semi-automated	~25%	~25%	94	only aggregate bias reported
				4133	mercury and aneroid	~52%	~52%		
Harrison et al. 2008[344]	UK	NR	NR	915866	unspecified	71.2 to 36.7%	63.5 to 36.3%	94	observers not sufficiently described
Lyratzopoulos et al. 2008[345]	UK	health care professionals	NR	37161 (from women)	mercury	67.3%	60.2%	100	no major limitations
			NR	33977 (from men)		63.1%	54.4%		
Niyonsenga et al. 2008[346]	Canada	family physicians	NR	18560	mercury and aneroid	81%	79%	94	observers not sufficiently described
Broad et al. 2007[347]	New Zealand	doctors and nurses	495	23676	mostly mercury	64.4%	61.8%	100	no major limitations

Reference	Country	Observers	*N*	No. of readings evaluated	Device(s)	Prevalence of zero end-digit (SBP)	Prevalence of zero end-digit (DBP)	Study quality (%)	Major limitations
Dickson et al. 2007[348]	USA	nurses	5	NR	unspecified manual	40%	46%	89	small sample size; number of measurements unknown
Kim et al. 2007[349]	USA	staff	NR	4330	unspecified manual devices	50%	50%	94	observers not sufficiently described
		doctors	NR	1347		69%	64%		
Roubsanthisuk et al. 2007[350]	Thailand	nurses	NR	907	unspecified manual devices	99%	99%	94	observers not sufficiently described
Graves et al. 2006[351]	USA	nurses	11	52827	aneroid	31.0%	33.5%	94	small sample size
Nietert et al. 2006[352]	USA	practising physicians	384	327583	unspecified	44.6%	47.5%	94	observers not sufficiently described
Campbell et al. 2005[8]	Canada	highly trained nurse	1	645	mercury	39.2%	24.0%	89	small sample size (n=1 observer)
de Lusignan et al. 2004[353]	UK	various health care staff	NR	81145	unspecified/ various	64%	59%	89	observers not sufficiently described
McManus et al. 2003[354]	UK	NR	NR	NR	manual	28.5 to 62.0%	27.4 to 58.9%	89	observers not described
Ostchega et al. 2003[355]	USA	trained doctors	4	7270	mercury	21%	23%	100	no major limitations
Thavarajah et al. 2003[356]	USA	nurses	NR	103	mercury	40%	23%	94	observers not sufficiently described
		doctors	NR	103		31%	36%		
Ali et al. 2002[357]	UK	NR	NR	NR	aneroid and mercury	75%	75%	83	observers not described; number of readings not reported
Wingfield et al. 2002a[358]	UK	NR	NR	6310	unspecified manual	30.4%	28.2, 31.4%	94	observers not sufficiently described
Wingfield et al. 2002b[359]	23 European countries	trained observers	NR	61320	mercury	42.4%	NR	94	observers not sufficiently described
Ataman et al. 1996[360]	USA	NR	NR	26937	mercury	23.5%	29.9%	89	observers not described
Torrance et al. 1996[361]	UK	student nurses	50	98	mercury	73.5%	73.5%	94	observers not sufficiently described

Reference	Country	Observers	*N*	No. of readings evaluated	Device(s)	Prevalence of zero end-digit (SBP)	Prevalence of zero end-digit (DBP)	Study quality (%)	Major limitations
Wen et al. 1993[362]	Canada	clinicians	NR	28841	unspecified manual	78%	NR	89	observers not described
Stoneking et al. 1992[363]	USA	nurses and nurses' aides	NR	292	mercury and aneroid	62%	62%	94	observers not sufficiently described
Villar et al. 1989[334]	USA	clinic staff	NR	149	mercury	42.5%	64.8%	94	observers not sufficiently described
Parr et al. 1988[275]	UK	general physicians	36	280	mercury	~33.9%	~33.9%	88	participants and observers same group; only aggregate bias reported
Hessel et al. 1986[364]	South Africa	doctors	12	7616	mercury	78.5%	74.2% (one doctor with bias for '2')	94	small sample size
Hla et al. 1986[365]	USA	nurses	NR	35	mercury	45%	Not reported	83	sample size unknown; small number of measurements
Patterson et al. 1984[366]	UK	doctors	18	1072	mercury	84%	65%	94	observers not sufficiently described