Online Supplement:

Systematic review and meta-analysis of preterm birth and later systolic blood pressure

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Table S1. Studies excluded from meta-analysis of preterm birth and/or very low birth weight and later resting SBP*

1st author Year published Country Year born	Selection of Preterm/ VLBW	*Sample size* Preterm/ VLBW Full term %SGA (of preterm/ VLBW)	*Age (years)* Mean ±SD Range	*% Follow-up* Preterm/ VLBW Full term	BP method (number of measurements)	*Multivariable adjustment*			Least adjusted SBP difference, mmHg (preterm/VLBW–term) P-value	Most adjusted SBP difference, mmHg (preterm/VLBW – term) P-value
						SES	FG	Size		
Vohr[1] 2010 U.S. 1989-1992	≤1250 g	296 95 10.8%	16.1 ±0.2 NR	68% 93%	Automated (x2)	No	No	Yes	4 mmHg† P=0.003	5.1 mmHg‡ P=0.0002
Evensen[2] 2009 Norway 1986-1988	<1500 g	37 63 38%	18.2 ±0.1 NR	54% 68%	Automated (x2)	No	No	No	6.5 mmHg† P<0.01	6.5 mmHg† P<0.01
Willemsen[3] 2008 Netherlands NR	<36 weeks	164 315 100%	6.3 ±2.2 NR	NR	Automated (x2)	Yes	Yes	Yes	0.3 BP standard deviation scores† P=0.01	NR P=0.003
Menezes[4] 2006 Brazil 1993	<37 weeks	359 4302 NR	11 ±NR NR	82% 89%	Automated (x2)	No	No	No	0.3 mmHg† p=0.67	0.3 mmHg† p=0.67
Rossi[5] 2011 France NR	<37 weeks	25 41 0%	13.9 ±1.4 13, 14	NR	Automated (x3)	No	No	No	6 mmHg† NR	6 mmHg† NR
Johansson[6]	24-28 weeks	162	18.2	NR	Manual	No	No	No	GA SBP diff,	GA SBP diff,

2005 Sweden 1973-1981	29-32 weeks 33-36 weeks	1370 12,660 275,895	±NR NR		(x2)				mmHg† 24-28 3 29-32 2 33-36 1 ≥37 ref NR	mmHg† 24-28 3 29-32 2 33-36 1 ≥37 ref NR
Bonamy[7] 2005 Sweden 1982-1989	≤34 weeks	34 32 26%	16.5 ±0.3 NR	57% NR	Automated (x9)	No	No	Yes	11 mmHg† P<0.0001	5.7 mmHg‡ P<0.001
Cheung[8] 2004 China 1990-1996	NR	51 35 29%	8.2 ±1.7 5.7, 12.6	NR NR	Automated (x2)	No	No	No	AGA preterm vs. full term: 1 mmHg† P=0.5 SGA preterm vs. full term: 3 mmHg† NR P=0.5	AGA preterm vs. full term: 1 mmHg† P=0.5 SGA preterm vs. full term: 3 mmHg† NR P=0.5
Singhal[9] 2001 U.K. 1982-1985	<1850 g	216 61 33%	15.0 ±0.9 NR	23% NR	Automated (x2)	No	No	No	0 mmHg† NR	0 mmHg† NR
Irving[10] 2000 U.K. 1973-1975	<2000 g	34 27 44%	24.3 ±0.5 NR	48% (preterm + full term combined)	Automated (x2)	No	No	No	7 mmHg† P<0.001	7 mmHg† P<0.001
Kistner[11] 2000 Sweden 1970-1974	<32 weeks	15 17 NR	26 ±1.9 23-30	60% NR	Automated (x3)	No	No	No	13 mmHg† P<0.001	13 mmHg† P<0.001
Erhardt[12]	<37 weeks	90	9.2	NR	NR	No	No	No	-1.6 mmHg†	-1.6 mmHg†

1999	24	±NR	(x3)	NR	NR
Hungary		6-10			
NR	NR				

VLBW is very low birth weight (<1500 g) and SBP is systolic blood pressure. SGA is small for gestational age and AGA is appropriate for gestational age. FG is fetal growth. NR is not reported.

*All studies excluded from meta-analysis because authors did not report 95% confidence interval or standard error around SBP difference

†Calculated by authors from data presented in paper; estimate is unadjusted

‡Estimate of SBP difference as reported in paper with p-value

Table S2. Studies of preterm birth and/or very low birth weight and later systolic hypertension

1st author Year published Country Year born	Selection of Preterm/ VLBW	*Sample size* Preterm/ VLBW Full term %SGA (of preterm/ VLBW)	*Age (years)* Mean ±SD Range	*% Follow-up* Preterm/ VLBW Full term	Hypertension definition	*Multivariable adjustment* SES	FG	Size	Least adjusted RR 95% confidence interval P-value	Most adjusted RR 95% confidence interval P-value
Crump[13] 2011 Sweden 1973-1979	23-27 weeks 28-32 weeks 33-34 weeks 35-36 weeks	174 3167 5685 19,194 589,573 NR	NR 25.5-37.0	98.1% (preterm + full term combined)	Anti-hypertensive medication prescriptions per year (≥1, ≥2, ≥3, ≥4)*	Yes	Yes	No	GA OR‡ 95% CI 23-27 2.5 1.1, 5.7 28-32 1.6 1.3, 2.0 33-34 1.3 1.1, 1.6 35-36 1.3 1.2, 1.4 37-42 ref ref	GA OR 95% CI 23-27 2.5 1.1, 5.7 28-32 1.5 1.2, 1.9 33-34 1.2 1.0, 1.5 35-36 1.3 1.1, 1.4 37-42 ref ref
Vohr[1] 2010 U.S. 1989-1992	≤1250 g	296 95 10.8%	16.1 ±0.2 NR	68% 93%	Systolic BP ≥95th percentile for gender, age, height	No	No	No	RR 2.5* NR NR	RR 2.5* NR NR
Keijzer-Veen[14] 2010 Netherlands 1983	<32 weeks gestation and/or <1500 g	52 30 NR	20.7 ±0.3 NR	5% NR	Ambulatory BP: 24 hour >135/85 mmHg Daytime >140/90 mmHg	No	No	No	24 hour AGA preterm 7% SGA preterm 5% Full term 0% (unable to calculate RR) NR Daytime AGA preterm 7%	24 hour AGA preterm 7% SGA preterm 5% Full term 0% (unable to calculate RR) NR Daytime AGA preterm 7%

					Nighttime >125/75 mmHg				SGA preterm 5% Full term 0% (unable to calculate RR) NR Nighttime AGA preterm 7% SGA preterm 5% Full term 1.5% RR (AGA preterm vs. full term) 4.7* NR RR (SGA preterm vs. full term) 3.3* NR	SGA preterm 5% Full term 0% (unable to calculate RR) NR Nighttime AGA preterm 7% SGA preterm 5% Full term 1.5% RR (AGA preterm vs. full term) 4.7* NR RR (SGA preterm vs. full term) 3.3* NR
Evensen[2] 2009 Norway 1986-1988	<1500 g	37 63 38%	18.2 ±0.1 NR	54% 68%	Systolic BP >140 mmHg	No	No	No	RR 2.8* NR NR	RR 2.8* NR NR
Bonamy[15] 2008 Sweden 1925-1949	≤32 weeks 33-34 weeks 35-36 weeks	947 1555 321 3174 NR	NR ±NR NR	NR NR	Discharge diagnosis	No	No	No	GA HR† 95% CI ≤32 1.2 0.8, 1.9 33-34 1.3 0.9, 2.0 35-36 1.2 0.8, 1.8 37-42 ref ref P for trend 0.14	GA HR† 95% CI ≤32 1.2 0.8, 1.9 33-34 1.3 0.9, 2.0 35-36 1.2 0.8, 1.8 37-42 ref ref P for trend 0.14
Dalziel[16] 2007 New Zealand 1969-1974	<37 weeks gestation	311 147 15%	30 ±NR NR	51% 44%	Self reported hypertension diagnosis	No	No	No	RR 2.1† 95% CI 1.2, 3.6 P=0.01	RR 2.1† 95% CI 1.2, 3.6 P=0.01
Johansson[6]	24-28 weeks	162	18.2 ±NR	NR	Systolic BP	Yes	Yes	Yes	GA OR† 95% CI	GA OR† 95% CI

2005 Sweden 1973-1981	29-32 weeks 33-36 weeks	1370 12,660 275,895 NR	NR		≥140 mmHg				24-28 29-32 33-36 37-41	1.8 1.4 1.2 ref	1.3, 2.5 1.3, 1.6 1.2, 1.3 ref	24-28 29-32 33-36 37-41	1.9 1.5 1.2 ref	1.3, 2.7 1.3, 1.6 1.2, 1.3 ref
Erhardt[12] 1999 Hungary Year NR	NR	90 24 NR	9.2 ±NR 6-10	NR	Systolic BP >95percentile for age	No	No	No	RR 0.7* NR NR			RR 0.7* NR NR		

VLBW is very low birth weight (<1500 g) and SBP is systolic blood pressure. FG is fetal growth. RR is relative risk, HR is hazard ratio, and OR is odds ratio.

*Calculated by authors from data presented in paper; estimate is unadjusted

†Most fully adjusted estimate of SBP difference as reported in paper with 95% confidence interval (CI) and/or p-value

‡data shown is for ≥1 prescription/year

Table S3. Studies of preterm birth and/or very low birth weight and later ambulatory SBP

1st author Year published Country Year born	Selection of Preterm/ VLBW	*Sample size* Preterm/ VLBW Full term %SGA	*Age (years)* Mean ±SD Range	*% Follow-up* Preterm/ VLBW Full term	*Multivariable adjustment*			Least adjusted ambulatory SBP difference, mmHg (preterm–term) 95% confidence interval P-value	Most adjusted ambulatory SBP difference, mmHg (preterm–term) 95% confidence interval P-value
					SES	FG	Size		
Hovi[17] 2010 Finland 1978-1985	<1500 g	118 120 33%	22±NR 18, 27	65% 55%	Yes	No	Yes	24 hour 1.8 mmHg‡ NR NR Daytime 1.9 mmHg‡ NR NR Nighttime 1.5 mmHg‡ NR NR	24 hour 3.1 mmHg† 95% CI 0.6, .55 P=0.02 Daytime 1.9 mmHg* NR NR Nighttime 1.5 mmHg* NR NR
Keijzer-Veen[14] 2010 Netherlands 1983	<32 weeks gestation and/or <1500 g	52 30 42%	20.7 ±0.3 NR	5% NR	No	No	No	24 hour 3.5 mmHg* NR P=0.04† Daytime 3.5 mmHg* NR P=0.8† Nighttime 3.0 mmHg*	24 hour 3.5 mmHg* NR P=0.04† Daytime 3.5 mmHg* NR P=0.8† Nighttime 3.0 mmHg*

								NR P=0.12	NR P=0.12
Bayrakci[18] 2007 Turkey 1987-2000	<37 weeks gestation	41 27 27%	18.6 ±NR NR	42% (preterm + full term)	No	No	No	24 hour 2.2 mmHg‡ NR NR Daytime 2.1 mmHg‡ NR NR Nighttime 3.9 mmHg‡ NR p<0.05	24 hour 2.2 mmHg* NR NR Daytime 2.1 mmHg* NR NR Nighttime 3.9 mmHg* NR p<0.05
Doyle[19] 2003 Australia 1977-1982	<1500 g and <37 weeks gestation	156 38 NR	18.6±NR NR	74% 63%	No	Yes	Yes	24 hour 4.7 mmHg† 95% CI 1.4, 8.0 NR Awake 5.0 mmHg† 95% CI 1.6, 8.5 NR Asleep 3.6 mmHg† 95% CI 0.1, 7.1 NR	24 hour 5.2 mmHg† 95% CI 2.1. 8.3 NR Awake 5.9 mmHg† 95% CI 2.8, 9.1 NR Asleep 1.4 mmHg† 95% CI -2.0, 4.8 NR

Kistner[11] 2000 Sweden 1970-1974	<32 weeks gestation and/or <1500 g	15 17 NR	26 ±1.9 23-30	60% NR	No	No	No	24 hour 4 mmHg* NR P=0.23 Daytime 5 mmHg*NR P=0.12 Nighttime 1 mmHg* NR P=0.92	24 hour 4 mmHg* NR P=0.23 Daytime 5 mmHg* NR P=0.12 Nighttime 1 mmHg* NR P=0.92

VLBW is very low birth weight (<1500 g) and SBP is systolic blood pressure. FG is fetal growth.
*Calculated by authors from data presented in paper; estimate is unadjusted
†Most fully adjusted estimate of SBP difference as reported in paper with 95% confidence interval (CI) and/or p-value

Table S4. Quality assessment of studies not included in the SBP meta-analysis

Study	Modified Newcastle-Ottawa Scale Selection (max. 3 ★)	Comparability (max. 2 ★)	Assessment of BP (max. 2 ★)	Total score (max. 7 ★)
Resting BP				
Vohr, 2010	★★★	★	★	★★★★★
Evensen, 2009	★★		★	★★★
Willemsen, 2008	★★	★★	★	★★★★★
Menezes, 2006	★★★		★★	★★★★★
Rossi, 2006	★★★		★	★★★★
Johansson, 2005	★★★		★	★★★★
Bonamy, 2005	★★	★	★★	★★★★★
Cheung, 2004	★★		★	★★★
Singhal, 2001	★★★		★★	★★★★★
Irving, 2001	★★★	★	★★	★★★★★★
Kistner, 2000	★★★		★	★★★★
Erhardt, 1999	★★		★	★★★
Hypertension diagnosis				
Crump, 2010	★★★	★★	★	★★★★★★
Keijzer-Veen, 2010	★★		★	★★★
Vohr, 2010	★★★	★	★	★★★★★
Evensen, 2009	★★		★	★★★
Bonamy, 2008	★★★		★	★★★★
Dalziel, 2007	★★★		★★	★★★★★
Johansson, 2005	★★★	★★	★	★★★★★★
Erhardt, 1999	★★		★	★★★
Ambulatory BP				
Hovi, 2010	★★★	★★	★★	★★★★★★★
Keijzer-Veen, 2010	★★		★	★★★
Bayrakci, 2007	★★		★	★★★
Doyle, 2003	★★★	★★	★	★★★★★★
Kistner, 2000	★★★		★	★★★★

BP is blood pressure

Supplemental References

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