

## ETS AND HEART DISEASE META-ANALYSES

Exposure	Estimates included	Number of estimates	Relative risk (95% confidence limits)*		Random-effects p, heterogeneity#
			Fixed-effects meta-analysis	Random-effects meta-analysis	
Spouse ever smoked†	All	73	1.10 (1.08-1.13)	1.18 (1.12-1.24)	+++
	(excluding Enstrom‡)	71	1.12 (1.10-1.15)	1.20 (1.14-1.26)	+++
	Male	25	1.04 (1.00-1.09)	1.07 (1.01-1.15)	+
	(excluding Enstrom‡)	24	1.06 (1.02-1.11)	1.09 (1.03-1.16)	++
	Female	36	1.09 (1.06-1.12)	1.20 (1.12-1.29)	+++
	(excluding Enstrom‡)	35	1.11 (1.07-1.14)	1.22 (1.14-1.32)	+++
	Sexes combined	12	1.32 (1.24-1.40)	1.30 (1.14-1.50)	+++
	<i>Heterogeneity</i>				***
	<i>Heterogeneity (excluding Enstrom‡)</i>				***
	North America	24	1.05 (1.02-1.08)	1.07 (1.02-1.13)	++
	(excluding Enstrom‡)	22	1.07 (1.04-1.10)	1.09 (1.04-1.15)	+++
	Europe	22	1.30 (1.17-1.45)	1.30 (1.17-1.45)	+++
	Asia	14	1.29 (1.17-1.42)	1.32 (1.16-1.49)	+++
	Other	13	1.26 (1.19-1.33)	1.24 (1.07-1.44)	++
	<i>Heterogeneity</i>				***
	<i>Heterogeneity (excluding Enstrom‡)</i>				***
	1984-89	13	1.25 (1.14-1.37)	1.27 (1.13-1.41)	+++
	1990-97	17	1.04 (1.00-1.08)	1.08 (1.01-1.16)	+
	1998-2004	14	1.07 (1.03-1.13)	1.14 (1.02-1.27)	+
	(excluding Enstrom‡)	12	1.19 (1.12-1.27)	1.21 (1.09-1.36)	+++
	2005-07	11	1.23 (1.16-1.30)	1.15 (1.04-1.28)	++
	2008 onwards	18	1.26 (1.15-1.39)	1.34 (1.16-1.56)	+++
	<i>Heterogeneity</i>				***
	<i>Heterogeneity (excluding Enstrom‡)</i>				***
	1-99 cases	13	1.62 (1.32-1.99)	1.66 (1.30-2.11)	+++
	100-199	13	1.37 (1.14-1.64)	1.37 (1.14-1.64)	+++
	200-999	29	1.25 (1.17-1.34)	1.26 (1.15-1.39)	+++
1000+	18	1.08 (1.05-1.10)	1.08 (1.02-1.15)	++	
<i>Heterogeneity</i>				***	
Case control studies	32	1.29 (1.21-1.36)	1.28 (1.15-1.42)	+++	
Prospective studies	32	1.04 (1.02-1.07)	1.098 (1.04-1.15)	+++	
Cross-sectional studies	9	1.20 (1.13-1.27)	1.23 (1.11-1.36)	+++	
<i>Heterogeneity</i>				***	
Spouse the index	34	1.03 (1.00-1.06)	1.06 (1.01-1.12)	+	
Not the index	39	1.23 (1.19-1.28)	1.24 (1.16-1.32)	+++	
<i>Heterogeneity</i>				***	

**ETS AND HEART DISEASE META-ANALYSES (Continued)**

Exposure	Estimates included	Number of estimates	Relative risk (95% confidence limits)*		Random-effects p, heterogeneity#
			Fixed-effects meta-analysis	Random-effects meta-analysis	
Spouse a current smoker <sup>§</sup>	All	73	1.12 (1.09-1.14)	1.19 (1.13-1.26)	+++
	(excluding Enstrom <sup>‡</sup> )	71	1.14 (1.11-1.17)	1.21 (1.15-1.28)	+++
	Male	25	1.06 (1.01-1.11)	1.10 (1.02-1.18)	+
	(excluding Enstrom <sup>‡</sup> )	24	1.08 (1.03-1.13)	1.12 (1.04-1.21)	++
	Female	36	1.10 (1.06-1.13)	1.22 (1.13-1.31)	+++
	(excluding Enstrom <sup>‡</sup> )	35	1.12 (1.08-1.16)	1.24 (1.15-1.34)	+++
	Sexes combined	12	1.32 (1.24-1.40)	1.30 (1.14-1.50)	+++
	<i>Heterogeneity</i>				***
	<i>Heterogeneity (excluding Enstrom<sup>‡</sup>)</i>				***
	North America	24	1.06 (1.03-1.09)	1.08 (1.03-1.14)	++
	(excluding Enstrom <sup>‡</sup> )	22	1.08 (1.05-1.11)	1.11 (1.05-1.18)	+++
	Europe	22	1.33 (1.19-1.49)	1.33 (1.18-1.50)	+++
	Asia	14	1.31 (1.19-1.44)	1.33 (1.19-1.49)	+++
	Other	13	1.26 (1.19-1.33)	1.24 (1.07-1.44)	++
	<i>Heterogeneity</i>				***
	<i>Heterogeneity (excluding Enstrom<sup>‡</sup>)</i>				***
	1984-89	13	1.25 (1.14-1.37)	1.26 (1.14-1.39)	+++
	1990-97	17	1.06 (1.02-1.09)	1.12 (1.04-1.22)	++
	1998-2004	14	1.08 (1.03-1.14)	1.16 (1.02-1.31)	+
	(excluding Enstrom <sup>‡</sup> )	12	1.20 (1.12-1.28)	1.25 (1.10-1.42)	+++
	2005-07	11	1.23 (1.16-1.30)	1.15 (1.03-1.29)	+
	2008 onwards	18	1.26 (1.15-1.39)	1.34 (1.16-1.56)	+++
	<i>Heterogeneity</i>				***
<i>Heterogeneity (excluding Enstrom<sup>‡</sup>)</i>				***	
1-99 cases	13	1.74 (1.39-2.17)	1.74 (1.39-2.17)	+++	
100-199	13	1.38 (1.15-1.66)	1.38 (1.15-1.66)	+++	
200-999	29	1.26 (1.18-1.36)	1.28 (1.16-1.41)	+++	
1000+	18	1.09 (1.06-1.12)	1.09 (1.03-1.16)	++	
<i>Heterogeneity</i>				***	
Case control studies	32	1.29 (1.22-1.36)	1.29 (1.15-1.45)	+++	
Prospective studies	32	1.06 (1.03-1.09)	1.12 (1.06-1.18)	+++	
Cross-sectional studies	9	1.20 (1.13-1.27)	1.23 (1.11-1.36)	+++	
<i>Heterogeneity</i>				***	
Spouse the index	34	1.04 (1.01-1.08)	1.10 (1.04-1.17)	++	
Not the index	39	1.23 (1.19-1.28)	1.23 (1.16-1.32)	+++	
<i>Heterogeneity</i>				***	
Workplace ETS exposure**	All	22	1.08 (0.99-1.19)	1.08 (0.99-1.19)	(+)
	Male	9	1.06 (0.94-1.19)	1.06 (0.94-1.19)	NS
	Female	11	1.05 (0.90-1.22)	1.05 (0.90-1.22)	NS
	Sexes combined	2	1.85 (1.24-2.78)	1.85 (1.24-2.78)	++
	<i>Heterogeneity</i>				*
	North America	8	1.06 (0.95-1.18)	1.06 (0.95-1.18)	NS
	Europe	8	1.09 (0.89-1.32)	1.08 (0.83-1.40)	NS
	Asia	2	1.37 (0.90-2.09)	1.37 (0.90-2.09)	NS
	Other	4	1.24 (0.83-1.86)	1.24 (0.83-1.86)	NS
	<i>Heterogeneity</i>				NS

**ETS AND HEART DISEASE META-ANALYSES (Continued /2)**

Exposure	Estimates included	Number of estimates	Relative risk (95% confidence limits) <sup>*</sup>		Random-effects p, heterogeneity <sup>#</sup>
			Fixed-effects meta-analysis	Random-effects meta-analysis	
Total ETS exposure	All	32	1.21 (1.16-1.26)	1.23 (1.11-1.35)	+++
ETS assessed by biomarker (cotinine or COHb%)	All	8	1.13 (0.99-1.29)	1.17 (0.93-1.48)	NS

<sup>\*</sup> Relative risk estimates and 95% confidence limits used in these meta-analyses are adjusted for covariates if adjusted data are available, and otherwise are unadjusted. If the source publication provides more than one adjusted estimate, the data that are normally presented are those adjusted for most covariates.

<sup>#</sup> Significance and heterogeneity p-values are coded as follows:

Significance (+ve, -ve)	Heterogeneity	Meaning
+++ , ---	***	p<0.001
++ , --	**	p<0.01
+ , -	*	p<0.05
(+), (-)	(*)	p<0.1
NS	NS	p≥0.1

<sup>†</sup> Index of exposure based on smoking by the spouse or, if not available, the nearest equivalent. Relative risk for spouse ever smoked versus never smoked where available, otherwise data for spouse a current smoker are used.

<sup>‡</sup> The study by Enstrom and Kabat<sup>1</sup> has been widely criticised, though for reasons which bear little or no relationship to the data presented.<sup>2</sup> The effect of excluding this study from some meta-analysis results is shown for illustrative purposes.

<sup>§</sup> Index of exposure based on smoking by the spouse or, if not available, the nearest equivalent. Relative risk for spouse a current smoker versus never or non smoker where available, otherwise data for spouse ever smoked are used.

<sup>\*\*</sup> Results are based on analyses limited to the working population, if available. Otherwise, the unexposed group includes those who do not work.

A document<sup>3</sup> and a full computer output<sup>4</sup> provide more information on the relative risks combined, significance tests of heterogeneity and other detail.

## References

1. Enstrom JE, Kabat GC. Environmental tobacco smoke and tobacco related mortality in a prospective study of Californians, 1960-98. *BMJ* 2003;**326**:1057-61. Full version available at <http://bmj.com/cgi/content/full/326/7398/1057>
2. Enstrom JE, Kabat GC. *The Lancet's* call to ban smoking in the UK [Letter]. *Lancet* 2004;**363**:398-9.
3. Lee PN, Forey BA, Hamling JS, Thornton AJ. *Epidemiological evidence on environmental tobacco smoke and heart disease*. Sutton, Surrey: P N Lee Statistics and Computing Ltd; 2015. [www.pnlee.co.uk/Reports.htm](http://www.pnlee.co.uk/Reports.htm) [Download LEE2015]
4. Lee PN, Forey BA, Hamling JS, Thornton AJ. *Detailed meta-analysis on ETS and heart disease*. Sutton, Surrey: P N Lee Statistics and Computing Ltd; 2015. [www.pnlee.co.uk/Reports.htm](http://www.pnlee.co.uk/Reports.htm) [Download LEE2015B]

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