ETS AND LUNG CANCER
META-ANALYSES

Exposure	Estimates considered	Number of estimates	Relative risk (95% confidence limits)[*]		Random-effects p, heterogeneity[#]
			Fixed-effects meta analysis	Random-effects meta-analysis	
Husband smoked[†]	All	86	1.21 (1.15-1.27)	1.26 (1.16-1.36)	+++
	N America	27	1.09 (1.00-1.20)	1.10 (0.96-1.27)	NS
	Europe	16	1.21 (1.06-1.37)	1.23 (1.04-1.45)	+
	Asia	41	1.28 (1.19-1.37)	1.38 (1.22-1.55)	+++
	- Japan	9	1.24 (1.05-1.46)	1.24 (1.05-1.46)	+
	- Hong Kong	6	1.42 (1.17-1.74)	1.41 (1.10-1.81)	++
	- China	19	1.16 (1.04-1.28)	1.34 (1.09-1.66)	++
	- Other	7	1.51 (1.30-1.75)	1.64 (1.25-2.15)	+++
	- *Heterogeneity: Asian countries*				*
	Other	2	1.22 (0.78-1.89)	1.22 (0.78-1.89)	NS
	Heterogeneity between continents				*(*)*
	Published in 1981-1989	26	1.36 (1.22-1.52)	1.36 (1.22-1.52)	+++
	Published in 1990-1999	27	1.09 (1.01-1.17)	1.15 (1.02-1.30)	+
	Published in 2000-2009	25	1.24 (1.12-1.37)	1.24 (1.10-1.40)	+++
	Published in 2010 onwards	8	1.36 (1.18-1.58)	1.43 (0.90-2.28)	NS
	Heterogeneity by publication date				**
	Published in 1981-1986	12	1.30 (1.11-1.52)	1.30 (1.09-1.55)	++
	Published in 1987-1989	14	1.43 (1.21-1.68)	1.43 (1.21-1.68)	+++
	Published in 1990-1994	11	0.99 (0.89-1.09)	1.04 (0.84-1.28)	NS
	Published in 1995-1998	11	1.23 (1.08-1.40)	1.25 (1.07-1.47)	++
	Published in 1999-2002	12	1.24 (1.08-1.43)	1.24 (1.08-1.43)	++
	Published in 2003-2006	11	1.13 (0.97-1.32)	1.14 (0.94-1.38)	NS
	Published in 2007-2010	11	1.42 (1.21-1.66)	1.41 (0.98-2.03)	(+)
	Published in 2011 onwards	4	1.32 (1.10-1.59)	1.48 (0.85-2.57)	NS
	Heterogeneity by publication date				***
	1-49 cases	20	1.32 (1.05-1.66)	1.32 (1.05-1.66)	+
	50-99	27	1.37 (1.21-1.56)	1.37 (1.17-1.60)	+++
	100-199	21	1.14 (1.04-1.26)	1.14 (0.99-1.31)	(+)
	200-399	12	1.48 (1.33-1.66)	1.48 (1.26-1.74)	+++
	400+	6	1.02 (0.93-1.12)	1.03 (0.86-1.24)	NS
	Heterogeneity by study size				***
	Case-control	71	1.20 (1.14-1.27)	1.27 (1.16-1.39)	+++
	Prospective	15	1.21 (1.06-1.38)	1.21 (1.06-1.38)	++
	Heterogeneity by study type				*NS*
	Not age adjusted	16	1.39 (1.22-1.58)	1.49 (1.23-1.81)	+++
	Age adjusted	70	1.17 (1.11-1.24)	1.22 (1.12-1.33)	+++
	Heterogeneity				*
	Dose-response results:				
	not reported	34	1.09 (1.00-1.19)	1.18 (1.04-1.35)	+
	reported	51	1.27 (1.19-1.35)	1.30 (1.18-1.44)	+++
	Heterogeneity				*
	Spouse the index	52	1.16 (1.09-1.23)	1.22 (1.12-1.32)	+++
	Spouse not the index	34	1.32 (1.20-1.45)	1.33 (1.13-1.56)	+++
	Heterogeneity				*

ETS AND LUNG CANCER META-ANALYSES (Continued)

Exposure	Estimates considered	Number of estimates	Relative risk (95% confidence limits)[*]		Random-effects p, heterogeneity[#]
			Fixed-effects meta analysis	Random-effects meta-analysis	
Husband smoked[†] (continued)	Squamous cell carcinoma	20	1.47 (1.27-1.70)	1.54 (1.19-1.98)	+++
	N America	5	1.45 (1.18-1.78)	1.58 (0.85-2.96)	NS
	Europe	7	1.68 (1.25-2.26)	1.69 (1.22-2.34)	NS
	Asia	8	1.32 (0.97-1.78)	1.32 (0.97-1.78)	NS
	Heterogeneity between continents				*NS*
	Adenocarcinoma	26	1.27 (1.16-1.40)	1.39 (1.18-1.63)	+++
	N America	7	1.10 (0.97-1.24)	1.10 (0.97-1.24)	NS
	Europe	7	1.13 (0.91-1.40)	1.09 (0.79-1.49)	NS
	Asia	12	1.76 (1.49-2.07)	1.86 (1.43-2.41)	+++
	Heterogeneity between continents				***
Wife smoked[†]	All	39	1.19 (1.05-1.35)	1.20 (1.03-1.39)	+
	N America	16	1.11 (0.90-1.37)	1.14 (0.85-1.55)	NS
	Europe	9	1.17 (0.90-1.50)	1.17 (0.90-1.50)	NS
	Asia	12	1.28 (1.03-1.59)	1.31 (0.98-1.73)	(+)
	Other	2	1.25 (0.78-1.99)	1.25 (0.78-1.99)	NS
	Heterogeneity between continents				*NS*
Husband or wife smoked[†,‡]	All	110	1.20 (1.15-1.26)	1.25 (1.16-1.35)	+++
	N America	36	1.10 (1.01-1.20)	1.13 (0.98-1.29)	(+)
	Europe	20	1.20 (1.07-1.34)	1.21 (1.05-1.40)	++
	Asia	50	1.28 (1.19-1.36)	1.35 (1.21-1.51)	+++
	- Japan	11	1.25 (1.07-1.46)	1.25 (1.07-1.46)	++
	- Hong Kong	8	1.32 (1.12-1.57)	1.31 (1.06-1.63)	+
	- China	22	1.15 (1.04-1.27)	1.30 (1.06-1.59)	+
	- Other	9	1.55 (1.35-1.79)	1.65 (1.27-2.15)	+++
	- Heterogeneity: Asian countries				**
	Other	4	1.23 (0.90-1.70)	1.23 (0.90-1.70)	NS
	Heterogeneity between continents				*(*)*
	Published in 1981-1989	34	1.38 (1.24-1.54)	1.38 (1.24-1.54)	+++
	Published in 1990-1999	33	1.09 (1.01-1.17)	1.15 (1.02-1.28)	+
	Published in 2000-2009	33	1.22 (1.12-1.33)	1.21 (1.08-1.36)	+++
	Published in 2010 onwards	10	1.33 (1.16-1.52)	1.42 (0.91-2.20)	NS
	Heterogeneity by publication date				**
	Published in 1981-1986	18	1.32 (1.14-1.53)	1.32 (1.13-1.54)	+++
	Published in 1987-1989	16	1.45 (1.24-1.70)	1.45 (1.24-1.70)	+++
	Published in 1990-1994	12	0.99 (0.89-1.10)	1.05 (0.85-1.29)	NS
	Published in 1995-1998	16	1.21 (1.08-1.37)	1.22 (1.07-1.39)	++
	Published in 1999-2002	13	1.21 (1.07-1.38)	1.22 (1.06-1.39)	++
	Published in 2003-2006	15	1.13 (0.99-1.30)	1.12 (0.94-1.34)	NS
	Published in 2007-2010	15	1.36 (1.20-1.55)	1.36 (0.99-1.86)	(+)
	Published in 2011 onwards	5	1.29 (1.08-1.54)	1.45 (0.93-2.25)	(+)
	Heterogeneity by publication date				***
	1-49 cases	21	1.64 (1.29-2.08)	1.64 (1.29-2.08)	+++
	50-99	31	1.30 (1.14-1.47)	1.27 (1.08-1.50)	++
	100-199	28	1.11 (1.02-1.22)	1.12 (0.98-1.29)	(+)
	200-399	21	1.35 (1.22-1.48)	1.34 (1.18-1.53)	+++
	400+	9	1.11 (1.03-1.20)	1.17 (0.95-1.43)	NS
	Heterogeneity by study size				***

ETS AND LUNG CANCER META-ANALYSES (Continued /2)

Exposure	Estimates considered	Number of estimates	Relative risk (95% confidence limits)[*] Fixed-effects meta analysis	Random-effects meta-analysis	Random-effects p, heterogeneity[#]
Husband or wife smoked[†,‡] (continued)	Case-control	89	1.20 (1.14-1.27)	1.26 (1.15-1.37)	+++
	Prospective	21	1.20 (1.07-1.36)	1.20 (1.07-1.36)	++
	Heterogeneity by study type				*NS*
	Not age adjusted	19	1.37 (1.21-1.55)	1.47 (1.21-1.79)	+++
	Age adjusted	91	1.18 (1.12-1.24)	1.21 (1.12-1.32)	+++
	Heterogeneity				*
	Dose-response results:				
	not reported	42	1.11 (1.03-1.20)	1.18 (1.05-1.33)	++
	results reported	67	1.26 (1.19-1.34)	1.29 (1.17-1.42)	+++
	Heterogeneity				*
	Spouse the index	66	1.16 (1.10-1.23)	1.22 (1.13-1.32)	+++
	Spouse not the index	44	1.28 (1.18-1.39)	1.27 (1.10-1.47)	++
	Heterogeneity				*(*)*
	Squamous cell carcinoma	22	1.39 (1.21-1.59)	1.42 (1.10-1.83)	++
	N America	5	1.40 (1.16-1.70)	1.58 (0.85-2.92)	NS
	Europe	8	1.59 (1.21-2.09)	1.61 (1.17-2.22)	++
	Asia	9	1.19 (0.90-1.56)	1.16 (0.81-1.67)	NS
	Heterogeneity between continents				*NS*
	Adenocarcinoma	28	1.28 (1.18-1.39)	1.40 (1.19-1.64)	+++
	N America	7	1.08 (0.96-1.22)	1.08 (0.96-1.22)	NS
	Europe	8	1.12 (0.92-1.37)	1.11 (0.82-1.49)	NS
	Asia	13	1.75 (1.51-2.03)	1.81 (1.41-2.31)	+++
	Heterogeneity between continents				***
Workplace ETS exposure[§]	All	43	1.24 (1.15-1.33)	1.24 (1.15-1.33)	+++
	N America	17	1.21 (1.09-1.35)	1.21 (1.06-1.37)	++
	Europe	11	1.18 (1.01-1.39)	1.18 (1.01-1.39)	+
	Asia	15	1.31 (1.15-1.48)	1.31 (1.15-1.48)	+++
	Heterogeneity between continents				*NS*
Childhood ETS exposure[**]	From any cohabitant	38	1.08 (1.00-1.16)	1.16 (1.02-1.32)	+
	N America	12	1.02 (0.90-1.15)	1.09 (0.91-1.32)	NS
	Europe	11	0.94 (0.81-1.08)	1.02 (0.81-1.29)	NS
	Asia	15	1.26 (1.11-1.42)	1.31 (1.02-1.67)	+
	Heterogeneity between continents				**
	From the mother specifically	9	0.96 (0.77-1.20)	0.98 (0.77-1.25)	NS
	From the father specifically	11	0.90 (0.80-1.00)	1.00 (0.78-1.29)	NS
	From parents specifically	8	0.78 (0.64-0.94)	0.78 (0.64-0.94)	-
Household ETS exposure[††]	Any	53	1.11 (1.04-1.18)	1.11 (1.04-1.18)	++
	From sources other than the spouse	10	1.07 (0.91-1.27)	1.21 (0.89-1.64)	NS
ETS exposure in travel[‡‡]	All	8	1.24 (1.01-1.53)	1.34 (0.94-1.93)	NS
Social	All	15	1.03 (0.92-1.16)	1.01 (0.82-1.24)	NS

ETS AND LUNG CANCER META-ANALYSES (Continued /3)

Exposure	Estimates considered	Number of estimates	Relative risk (95% confidence limits)[*]		Random-effects p, heterogeneity[#]
			Fixed-effects meta analysis	Random-effects meta-analysis	
Total ETS exposure	All	41	1.39 (1.28-1.51)	1.40 (1.22-1.62)	+++
	N America	12	1.15 (0.99-1.33)	1.30 (0.98-1.71)	(+)
	Europe	11	1.08 (0.89-1.30)	1.07 (0.86-1.32)	NS
	Asia	18	1.78 (1.57-2.01)	1.73 (1.49-2.02)	+++
	Heterogeneity between continents				***

[*] 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.

[#] 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	$p \geq 0.1$

[†] Index of exposure based on smoking by the spouse or, if not available, the nearest equivalent.

[‡] Based on 70 estimates for women, 24 for men and 16 for sexes combined.

[§] Results are based on analyses limited to the working population, if available. Otherwise the unexposed group includes those who do not work.

[**] Where estimates are available for more than one period of childhood, those for the earliest period have been used.

[††] Where estimates are only available for specific household members, those for the mother have been used.

[‡‡] Where estimates are available for more than one index of social or travel ETS exposure, those for the index with the highest frequency of exposure have been used.

A document[1] and a full computer output[2] provide more information on the individual relative risks, significance tests of heterogeneity and other detail.

References

1. Lee PN, Forey BA, Hamling JS. *Epidemiological evidence on environmental tobacco smoke and lung cancer*. Sutton, Surrey: P N Lee Statistics and Computing Ltd; 2013. www.pnlee.co.uk/Reports.htm [Download LEE2013B]

2. Lee PN, Forey BA, Hamling JS. *Detailed meta-analysis on ETS and lung cancer*. Sutton, Surrey: P N Lee Statistics and Computing Ltd; 2013. www.pnlee.co.uk/Reports.htm [Download LEE2013D]