Supplementary Online Content

Mustafić H, Jabre P, Caussin C, et al. Main air pollutants and myocardial infarction: a systematic review and meta-analysis. *JAMA*. 2012;307(7):713-721.

This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix. Search strategies

Ovid

Database(s): EMBASE 1988 to 2011 Week 10, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) 1948 to Present, EBM Reviews - Cochrane Central Register of Controlled Trials 1st Quarter 2011, EBM Reviews - Cochrane Database of Systematic Reviews 2005 to February 2011 Search Strategy:

#	Searches	Results
1	myocardial infarct*.mp.	289174
2	heart attack*.mp.	6961
3	exp Acute Coronary Syndrome/	16658
4	acute coronary syndrome*.mp.	35254
5	exp Myocardial Infarction/	292436
6	exp heart infarction/	156160
7	("cardiac infarct*" or "cardial infarct*" or ("coronary arter*" adj3 occlusion) or (heart adj2 infarct*) or "myocardium infarct*" or "premonitory infarction sign" or "subendocardial infarct*" or "myocardial stunning" or "cardiogenic shock").mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, ps, rs, nm, ui, kw, tx, ct]	180323
8	or/1-7	391120
9	exp air pollution/	105560
10	exp Particulate Matter/	49843
11	((air or atmosphere or atmospheric) adj (pollution* or polluted or pollutant* or contamination or contaminated)).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, ps, rs, nm, ui, kw, tx, ct]	115230
12	("particulate matter" or "PM2.5" or "PM10").mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, ps, rs, nm, ui, kw, tx, ct]	33973
13	exp ozone/	22927
14	exp Carbon Monoxide/	29104
15	exp Carbon Monoxide Poisoning/	6524
16	exp nitrogen dioxide/	7822
17	exp Sulfur Dioxide/	9692
18	(ozone or "O3" or "carbon monoxide" or carbonmonoxide or "nitrogen dioxide" or "NO2" or "N2O4" or "dinitrogen tetraoxide" or "nitrogen peroxide" or "nitrogen tetroxide" or nitrogenoxide or "nitrous dioxide" or "sulphur dioxide" or "sulphur dioxyde" or "sulfurous anhydride" or "SO2").mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, ps, rs, nm, ui, kw, tx, ct]	102577
19	("CO" adj3 (pollut* or contamin* or particulate or poisoning)).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, ps, rs, nm, ui, kw, tx, ct]	2687
20	or/9-19	255133
21	8 and 20	1322
22	limit 21 to human [Limit not valid in CCTR,CDSR; records were retained]	1043
23	limit 22 to humans [Limit not valid in CCTR,CDSR; records were retained]	1043
24	remove duplicates from 23	771
25	from 24 keep 1-763	763
26	limit 25 to (book or book series or editorial or erratum or letter or addresses or autobiography or bibliography or biography or comment or dictionary or directory or interactive tutorial or interview or lectures or legislation or news or patient education handout or periodical index or portraits or published erratum or video-audio media or webcasts) [Limit not valid in EMBASE,Ovid MEDLINE(R),Ovid MEDLINE(R) In-Process,CCTR,CDSR; records were retained]	72
27	25 not 26	691
28	24 not 25	8

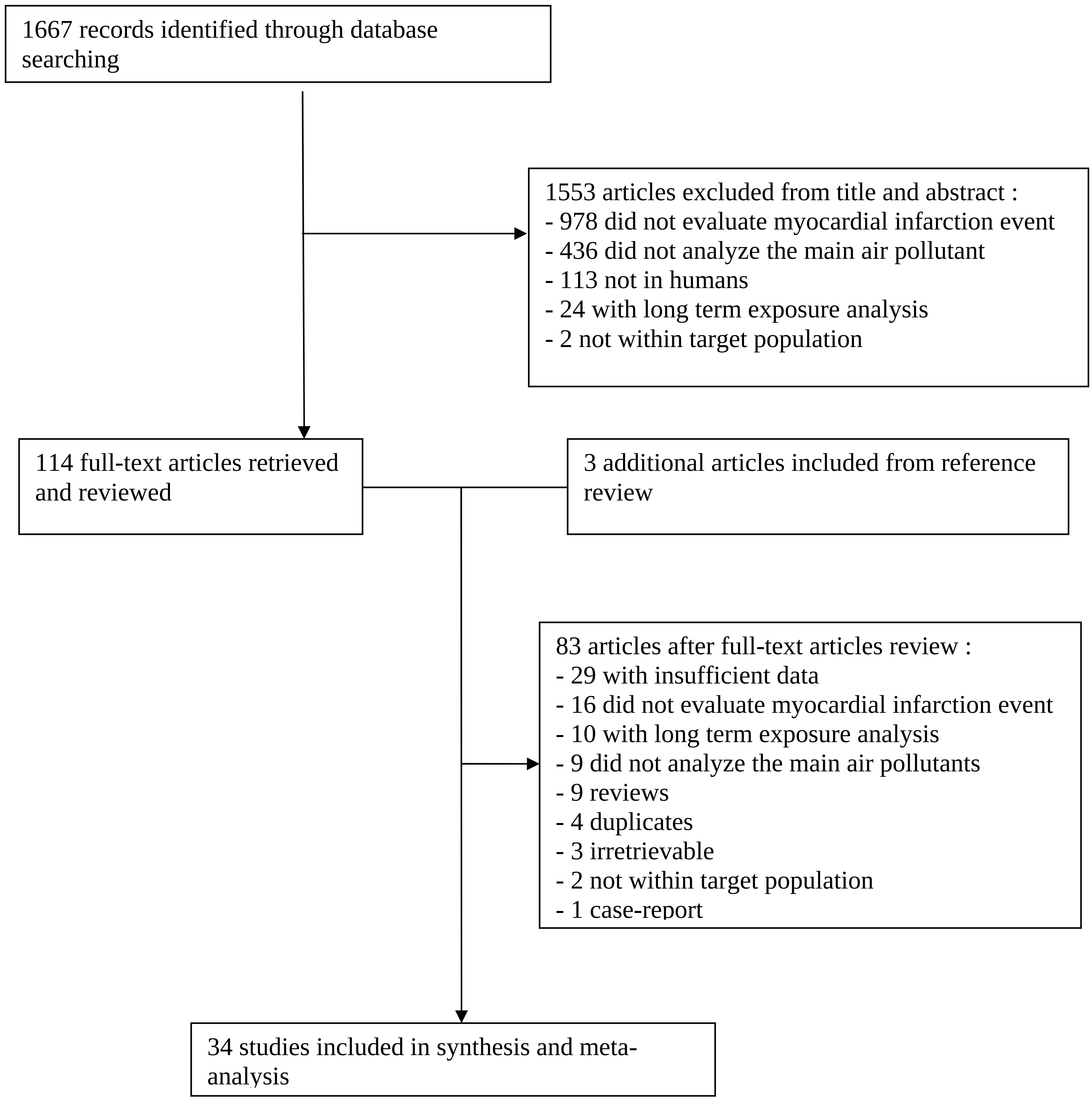
29	27 or 28	699

eAppendix. Search strategies cont.

Scopus

1	TITLE-ABS-KEY("cardiac infarct*" or "cardial infarct*" or ("coronary arter*" W/3 occlusion) or (heart W/2 infarct*) or "myocardium infarct*" or "premonitory infarction sign" or "subendocardial infarct*" or "myocardial stunning" or "cardiogenic shock" or "myocardial infarct*" or "heart attack*" or "acute coronary syndrome*")
2	TITLE-ABS-KEY((air w/1 pollut*) or (air w/1 contamination) or (air w/1 contaminated) or (atmosphere w/1 pollut*) or (atmosphere w/1 contamination) or (atmosphere w/1 contaminated) or (atmospheric w/1 pollut*) or (atmospheric w/1 contamination) or (atmospheric w/1 contaminated) or "particulate matter" or "PM2.5" or "PM10" or ozone or "O3" or "carbon monoxide" or carbonmonoxide or "nitrogen dioxide" or "NO2" or "N2O4" or "dinitrogen tetraoxide" or "nitrogen peroxide" or "nitrogen tetroxide" or nitrogenoxide or "nitrous dioxide" or "sulphur dioxide" or "sulphur dioxyde" or "sulfurous anhydride" or "SO2" or (co w/3 pollut*) or (co w/3 contamin*) or (co w/3 particulate) or (co w/3 poisoning))
3	1 and 2
4	PMID(0*) OR PMID(1*) OR PMID(2*) OR PMID(3*) OR PMID(4*) OR PMID(5*) OR PMID(6*) OR PMID(7*) OR PMID(8*) OR PMID(9*)
5	3 and not 4
6	DOCTYPE(le) OR DOCTYPE(ed) OR DOCTYPE(bk) OR DOCTYPE(er) OR DOCTYPE(no) OR DOCTYPE(sh)
7	5 and not 6

eFigure. Flowchart of search strategy and selection of studies for meta-analysis



eTable 1. Description of the studies

Study	Location	Period	Data source	Population	Number of events	Air pollution exposure variables	Potential confounders included	Lag pattern (single-day, mean-days or both)	Model (mono-pollutant, multi-pollutant or both)	Air pollutant peak or / and mean concentration	Pollutant measurement quality score (0-1 point)	MI validation score (0-1 point)	Adjustment quality score (0-3 points)
Case crosser studies of good quality													
Barnett[9], 2006	5 cities in Australia and 2 cities in New-Zealand	1998 - 2001	Hospital admissions	General	Not given	O_3, CO, NO_2, PM10, PM2.5	Trends, seasonality, temperature, humidity, pression, day of week, holidays, influenza levels	Mean-days	Both	Mean	1	1	3
Bhaskaran[46], 2011	England and Wales	2003 - 2006	MI registry	General	79288	O_3, CO, NO_2, SO_2, PM10	Trends, seasonality, temperature, humidity, holidays, influenza levels	Both	Both	Mean	1	1	3
D'Ippoliti[36], 2003	Roma, Italy	1995 - 1997	Hospital admissions	General	6531	CO, NO_2	Trends, seasonality, temperature, humidity, day of week	Both	Mono-pollutant	Mean	1	1	3
Henrotin[37], 2010	Dijon, France	2001 - 20007	MI registry	General	771	O_3	Trends, seasonality, temperature, humidity, holidays, influenza levels	Both	Multi-pollutant	Peak and mean	1	1	3
Ruidavets[44], 2005	Toulouse, France	1997 - 1999	MI registry	General	399	O_3, NO_2, SO_2	Trends, seasonality, temperature, humidity, influenza levels	Both	Mono-pollutant	Peak or mean	1	1	3
Zanobetti[45], 2006	Boston, USA	1995 - 1999	Hospital admissions	65 years and +	15578	O_3, CO, NO_2, PM2.5	Trends, seasonality, temperature, humidity, pression, day of week	Both	Mono-pollutant	Mean	1	1	3

eTable 1. Description of the studies cont.

Study	Location	Period	Data source	Population	Number of events	Air pollution exposure variables	Potential confounders included	Lag pattern (single-day, mean-days or both)	Model (mono-pollutant, multi-pollutant or both)	Air pollutant peak or / and mean concentration	Pollutant measurement quality score (0-1 point)	MI validation score (0-1 point)	Adjustment quality score (0-3 points)
Case crosser studies of intermediate quality													
Belleudi[41], 2010	Roma, Italy	2001 - 2005	Emergency hospital admissions	General	22659	PM10, PM2.5	Trends, seasonality, temperature, pression, holidays influenza levels	Both	Mono-pollutant	Mean	1	1	1
Berglind[10], 2010	Stockholm, Sweden	1993 - 1994	MI registry	General	660	O_3, CO, NO_2, PM10	Trends, seasonality, temperature, humidity, day of week influenza levels	Single-day	Mono-pollutant	Mean	1	1	2
Nuvolone[42], 2011	Tuscany, Italy	2002 - 2005	MI registry	General	11450	CO, NO2, PM10	Trends, seasonality, temperature, holidays, day of week influenza levels	Both	Both	Peak or mean	1	1	2
Pope[35], 2006	Utah, USA	1991 - 2001	Angio-graphic registry	General	3910	PM2.5	Trends, seasonality, temperature, day of week	Both	Mono-pollutant	Mean	1	1	2
Rich[21], 2010	New Jersey, USA	2004 - 2006	Hospital admissions	General	5864	PM2.5	Trends, seasonality, temperature, day of week	Single-day	Multi-pollutant	Mean	1	1	2
Sullivan[22], 2005	Washington	1988 - 1994	Hopsital admissions	General	5793	CO, NO_2, PM2.5	Trends, seasonality, temperature, day of week	Single-day	Mono-pollutant	Mean	1	1	2
Zanobetti[29], 2005	21 cities in USA	1986 - 1999	Hospital admissions	General	302453	PM10	Trends, seasonality, temperature, day of week	Single-day	Mono-pollutant	Mean	1	1	2

eTable 1. Description of the studies cont.

Study	Location	Period	Data source	Population	Number of events	Air pollution exposure variables	Potential confounders included	Lag pattern (single-day, mean-days or both)	Model (mono-pollutant, multi-pollutant or both)	Air pollutant peak or / and mean concentration	Pollutant measurement quality score (0-1 point)	MI validation score (0-1 point)	Adjustment quality score (0-3 points)
Case crosser studies of low quality													
Cheng[33], 2009	Kaohsiung, Taïwan	1996 - 2006	Hospital admissions	General	Not given	O_3, NO_2, SO_2, PM10	Trends, humidity, day of week	Mean-days	Both	Mean	1	1	0
Hsieh[34], 2010	Taipei, Taïwan	1996 - 2006	Hospital admissions	General	23420	O_3, CO, NO_2, SO_2, PM10	Trends, seasonality, humidity	Mean-days	Mono-pollutant	Mean	1	1	0
Peters[20], 2001	Boston, USA	1999 - 2001	MI registry	General	772	O_3, CO, NO_2, SO_2, PM10, PM2.5	Seasonality, temperature, humidity	Single-day	Mono-pollutant	Mean	1	1	0
Peters[43], 2005	Augsburg, Germany	1999 - 2001	MI registry	General	851	O_3, CO, NO_2, SO_2, PM10, PM2.5	Seasonality, temperature, humidity, pression, day of week	Both	Mono-pollutant	Mean	1	1	0

eTable 1. Description of the studies cont.

Study	Location	Period	Data source	Population	Number of events	Air pollution exposure variables	Potential confounders included	Lag pattern (single-day, mean-days or both)	Model (mono-pollutant, multi-pollutant or both)	Air pollutant peak or / and mean concentration	Pollutant measurement quality score (0-1 point)	MI validation score (0-1 point)	Adjustment quality score (0-3 points)
Time-series studies of good quality													
Braga[7], 2001	10 cities in USA	1986 - 1993	Death registry	General	Not given	PM10	Trends, seasonality, temperature, humidity, pression, day of week	Both	Mono-pollutant	Peak or mean	1	1	3
Eilstein[23], 2001	Strasbourg, France	1984 - 1989	MI registry	General	Not given	O_3, CO, NO_2, SO_2	Trends, seasonality, temperature, humidity, pression, day of week, influenza levels	Single-day	Mono-pollutant	Peak and mean	1	1	3
Hoek[32], 2001	Netherlands	1986 - 1994	Death registry	General	62 per day	O_3, CO, NO_2, SO_2, PM10	Trends, seasonality, temperature, humidity, day of week, holidays influenza levels	Mean-days	Mono-pollutant	Peak or mean	1	1	3
Lanki[24], 2006	5 cities in Europe	1992 - 2000	MI registry, hospital admissions	General	26854	O_3, CO, NO_2, PM10	Trends, seasonality, temperature, humidity, pression, day of week, holidays	Single-day	Mono-pollutant	Mean	1	1	3
Mate[25], 2010	Madrid, Spain	2003 - 2005	Death registry	General	1096	PM2.5	Trends, seasonality, temperature, day of week, influenza levels	Single-day	Mono-pollutant	Mean	1	1	3
Poloniecki[27], 1997	London, UK	1987 - 1994	Hospital admissions	General	68300	O_3, CO, NO_2, SO_2	Trends, seasonality, temperature, humidity, day of week, influenza levels	Single-day	Both	Mean	1	1	3
Sharovsky[40], 2004	Sao Paulo, Brazil	1996 - 1998	Death registry	General	12007	CO, SO_2, PM10	Trends, seasonality, temperature, humidity, day of week, holidays influenza levels	Both	Mono-pollutant	Mean	1	1	3

eTable 1. Description of the studies cont.

Study	Location	Period	Data source	Population	Number of events	Air pollution exposure variables	Potential confounders included	Lag pattern (single-day, mean-days or both)	Model (mono-pollutant, multi-pollutant or both)	Air pollutant peak or / and mean concentration	Pollutant measurement quality score (0-1 point)	MI validation score (0-1 point)	Adjustment quality score (0-3 points)
Time-series studies of intermediate quality													
Linn[12], 2000	Los Angeles, USA	1992 - 1995	Hospital admissions	General	Not given	O_3, CO, NO_2, PM10	Trends, seasonality, temperature, humidity, pression, day of week	Single-day	Mono-pollutant	Peak or mean	1	1	1
Mann[39], 2002	California, USA	1988 - 1995	Insurance registry	General	19690	O_3, CO, NO_2, PM10	Trends, seasonality, temperature, day of week	Both	Mono-pollutant	Peak or mean	1	1	2
Zanobetti[30], 2009	112 cities in USA	1999 - 2005	Death registry	General	397894	PM2.5	Trends, seasonality, temperature, day of week	Mean-days	Mono-pollutant	Mean	1	1	2
Zanobetti[31], 2009	26 cities in USA	2000 - 2003	MEDICARE registry, hospital admissions	65 years and +	121652	PM2.5	Trends, seasonality, temperature, day of week	Mean-days	Mono-pollutant	Mean	1	1	2

eTable 1. Description of the studies cont.

Study	Location	Period	Data source	Population	Number of events	Air pollution exposure variables	Potential confounders included	Lag pattern (single-day, mean-days or both)	Model (mono-pollutant, multi-pollutant or both)	Air pollutant peak or / and mean concentration	Pollutant measurement quality score (0-1 point)	MI validation score (0-1 point)	Adjustment quality score (0-3 points)
Time-series studies of low quality													
Cendon[14], 2006	Sao Paulo, Brazil	1998 - 1999	Hospital admissions	65 years and +	19272	O_3, CO, NO_2, SO_2, PM10	Trends, seasonality, temperature, day of week	Both	Mono-pollutant	Peak or mean	0	1	1
Koken[8], 2003	Denver, USA	1993 - 1997	Hospital admissions	65 years and +	1576	O_3, CO, NO_2, SO_2, PM10	Trends, temperature, day of week	Single-day	Mono-pollutant	Mean	1	1	0
Medina[26], 1997	Paris, France	1991 - 1995	Doctor's house calls registry	General	Not given	O_3, NO_2, SO_2, PM10	Trends, seasonality, temperature, humidity, influenza levels	Single-day	Mono-pollutant	Peak or mean	1	0	2
Stieb[28], 2009	14 cities in Canada	1992 - 2003	Emergency admissions	General	63184	O_3, CO, NO_2, SO_2, PM10, PM2.5	Seasonality, temperature, humidity, day of week	Single-day	Mono-pollutant	Mean	1	0	0
Ueda[38], 2009	9 cities in Japan	2002 - 2004	Death registry	General	67897	PM2.5	Seasonality, temperature, humidity, day of week	Both	Mono-pollutant	Mean	1	1	0
Ye[19], 2001	Tokyo, Japan	1980 - 1995	Hospital emergency transports	65 years and +	Not given	O_3, CO, NO_2, SO_2, PM10	Trends, temperature	Single-day	Mono-pollutant	Mean	1	0	0

O_3: ozone; CO: carbon monoxide; NO_2: nitrogen dioxide; SO_2: sulfur dioxide; PM10: particulate matter within 10 μm; PM2.5: particulate matter; MI: myocardial infarction.

eTable 2. Ozone studies and temperature adjustment

Study	Adjustment for temperature
Case-crossover studies	
Bhaskaran[46], 2011	Daily minimum and maximum temperatures, non linear temperature adjustment, lag day 0 and lag days 0-3
Henrotin[37], 2010	Stratification on warm, intermediate and cold periods
Ruidavets[44], 2005	Daily minimum and maximum temperatures, non-linear temperature adjustment, lag day 0
Zanobetti[45], 2006	Non-linear temperature adjustment, lag day 1
Berglind[10], 2010	Non-linear temperature adjustment, lag day 0 and lag day 1
Cheng[33], 2009	Stratification on daily mean temperature with a 25°c cut-off
Hsieh[34], 2010	Stratification on daily mean temperature with a 23°c cut-off
Peters[20], 2001	Daily minimum temperature, non linear temperature adjustment, lag day 0
Peters[43], 2005	Non-linear temperature adjustment, lag day 0
Time-series studies	
Eilstein[23], 2001	Daily minimum temperature and non-linear temperature adjustment, lag day 0 and lag days 0-5
Hoek[32], 2001	Not reported
Lanki[24], 2006	Non linear temperature adjsutment, lag day 0 and average lag days 1-3
Poloniecki[27], 1997	Linear temperature adjustment, lag day 1
Linn[12], 2000	Daily mean temperature and non-linear temperature adjustment, lag day 0
Mann[39], 2002	Non-linear temperature adjustment, lag day 0
Cendon[11], 2006	Non-linear temperature adjustment, 2-day moving average
Koken[8], 2003	Daily maximum and non-linear temperature adjustment, lag days 0-4
Medina[26],1997	Dew point temperature, non-linear temperature adjustment, lag days 0-2
Stieb[28], 2009	Daily mean temperature, non-linear temperature adjustment, lag days 0-2