Summary of findings:

6. Relative effect of association: household tobacco smoke exposure compared to no household tobacco smoke exposure for prevention of acute otitis media

Patient or population: Children aged 0 to18 years

Setting: Community / Primary health care.

Intervention: Household tobacco smoke exposure. Duration ranged from 6 months to 10 years.

Comparison: No household tobacco smoke exposure.

Outcome No. of participants (studies)	Relative effect (95% CI)	Anticipated absolute effects (95% CI)			Quality	What happens
		Without household tobacco smoke exposure	**With household tobacco smoke exposure**	**Difference**		
Risk of middle ear infection (includes AOM, OME, recurrent otitis media, chronic otitis media) with any household member smoking assessed with: parental report / health record review follow up: median 2 years (37 observational studies) [1,a]	**OR 1.32** (1.20 to 1.45)	Raw data not available.			⨁◯◯◯ VERY LOW [c,d]	In children exposed to household smoking compared to no household smoking there is possibly an increased risk of OM during 2 years follow-up. NNT not evaluable
Risk of middle ear infection (includes AOM, OME, recurrent otitis media, chronic otitis media) with postnatal maternal smoking assessed with: parental report / health record review follow up: range 6 months to 10 years (14 observational studies) [1,b]	**OR 1.53** (1.22 to 1.92)	Raw data not available			⨁◯◯◯ VERY LOW [c,d]	In children exposed to postnatal maternal smoking compared to no smoking there is possibly an increased risk of OM between 6 months to 10 years of age. NNT not evaluable

Summary of findings:

6. Relative effect of association: household tobacco smoke exposure compared to no household tobacco smoke exposure for prevention of acute otitis media

Patient or population: Children aged 0 to18 years

Setting: Community / Primary health care.

Intervention: Household tobacco smoke exposure. Duration ranged from 6 months to 10 years.

Comparison: No household tobacco smoke exposure.

Outcome № of participants (studies)	Relative effect (95% CI)	Anticipated absolute effects (95% CI)			Quality	What happens
		Without household tobacco smoke exposure	**With household tobacco smoke exposure**	**Difference**		
Risk of requiring surgery for middle ear disease with any household member smoking assessed with: parental report / health record review follow up: median 12 months (11 observational studies) [1,e]	**R 1.62** (1.31 to 1.98)	Raw data not available			⨁◯◯◯ VERY LOW [c,d]	In children exposed to household smoking compared to no household smoking there is possibly an increased risk of requiring surgery for OM during 12 months follow-up.
Diagnosis of OM (AOM, OME, TM perforation with or without discharge) - observational study in Indigenous children. assessed with: ENT examination, otoscopy, pneumatic otoscopy and tympanometry follow up: median 12 months № of participants: 80 (1 observational study) [2,f]	**OR 3.54** (1.68 to 7.47)	55.2%	**81.3%** (67.4 to 90.2) [g]	**26.2% more** (12.2 more to 35 more)	⨁◯◯◯ VERY LOW [h,i]	In Aboriginal children exposed to household tobacco smoke compared to no household tobacco smoke there are possibly more OM episodes at 12 months follow-up. NNT not evaluable

Summary of findings:

6. Relative effect of association: household tobacco smoke exposure compared to no household tobacco smoke exposure for prevention of acute otitis media

Patient or population: Children aged 0 to18 years

Setting: Community / Primary health care.

Intervention: Household tobacco smoke exposure. Duration ranged from 6 months to 10 years.

Comparison: No household tobacco smoke exposure.

Outcome № of participants (studies)	Relative effect (95% CI)	Anticipated absolute effects (95% CI)			Quality	What happens
		Without household tobacco smoke exposure	**With household tobacco smoke exposure**	**Difference**		
Post-operative tympanostomy tube otorrhoea with household smoking assessed with: parental report follow up: mean 323 days № of participants: 191 (1 observational study) [3,j]	**OR 2.310** (1.734 to 6.028)	45.3%	**65.7%** (58.9 to 83.3)	**20.4% more** (13.6 more to 38 more)	⨁◯◯◯ VERY LOW [k,l]	In children exposed to household tobacco smoke compared to no tobacco smoke there is possibly more post-operative TTO at ~1 year follow-up. NNT not evaluable

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

OR: Odds ratio; **CI:** Confidence interval; **RR:** Risk ratio; **NS:** Not significant; **NNT**: Number needed to treat; **NNH**: Number needed to harm

GRADE Working Group grades of evidence
High quality: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Explanations

a. Studies taken from: Jones Systematic Review and Meta-analysis 2012 (Adair-Bischoff and Sauve 1998, Alho 1993, Apostolopoulos 1998, Barr and Coatesworth 1991, Bentdal 2007, Collet 1995, da Costa 2004, Daly 2007, Engel 1999, Etzel 1992, Froom 2001, Gliddon and Sutton 2001, Gryczyska1999, Gultekin 2010, Hinton and Buckley 1988, Homøe 1999, Inversen 1985, Jacoby 2008, Lasisi 2007, Lee 2003, Lieuand Feinstein 2002, Lubianca Neto 1999, Paradise 1997, Pukander 1985, Rylander and Mégarand 2000, Safavi Naini 2002, Saim 1997, Salazar 1997, Shiva 2003, Sophia 2010, Stathis 1999, Stenström 1993, Stachan and Cook 1990, Tainio 1998, Teele 1989, Zenellis 2005, Zielhui 1989.

b. Risk of Bias: Recall bias in some studies as AOM is by parental report.

c. Inconsistency: High heterogeneity.

d. Studies taken from: Adair-Bischoff and Sauve 1998, Barr and Coatesworth 1991, Bennett and Haggard 1998, Daigler 1991, Daly 2007, Ey 1995, Gliddon and Sutton 2001, Green and Cooper 1991, Gultekin 2010, Håberg 2010, Hammarén-Malmi 2005, Hammarén-Malmi 2007, Lieu and Feinstein 2002, Stenström and Ingvarsson 1997.

e. Studies taken from: Jones Systematic Review and Meta-analysis 2012 (Hinton 1989, Hinton 1993, Ilicali 1999, Ilicali 2001, Kitchens 1995, Kraemer 1983, Rasmussen 1993, Rowe-Jones and Brockbank 1992, Said 1978, Stahlberg 1986, Willat 1986).

f. Study: Jacoby 2008

h. Risk of Bias: Risk of reporter bias as tobacco smoke exposure recorded as per carer report.

i. Imprecision: Small, single study

j. Study: Bizzell 2017

k. Risk of Bias: Risk of recall bias as outcome based on parental report.

l. Imprecision: Small, single study.

References

1. Jones LL, Hassanien A, Cook DG, Britton J, Leonardi-Bee J. Parental smoking and the risk of middle ear disease in children: a systematic review and meta-analysis. Archives of pediatrics & adolescent medicine. 2012;166(1):18-27. Epub 2011/09/07. doi: 10.1001/archpediatrics.2011.158. PubMed PMID: 21893640.
2. Jacoby PA, Coates HL, Arumugaswamy A, Elsbury D, Stokes A, Monck R, et al. The effect of passive smoking on the risk of otitis media in Aboriginal and non-Aboriginal children in the Kalgoorlie-Boulder region of Western Australia. The Medical journal of Australia. 2008;188(10):599-603. Epub 2008/05/20. PubMed PMID: 18484936.
3. Bizzell JG, Cox MD, Wang AR, Richter GT, Nolder AR. The impact of tobacco exposure on development of otorrhea after myringotomy tube placement. International journal of pediatric otorhinolaryngology. 2017;92:67-9. Epub 2016/12/26. doi: 10.1016/j.ijporl.2016.10.024. PubMed PMID: 28012536.