Pneumococcal vaccination and ventilation tube insertion

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HISTORY

- Pneumococcal vaccination PCV 7 reduces invasive pneumoccal disease
- Two studies indicated effect on acute otitis media (AOM) and ventilation tube (VT) insertion
- AOM and VT insertion were not direct outcome measures
- More studies !!!

Ideal study

- Prospective study of the incidences of AOM before and after introduction of the vaccine
- Impracticable in Denmark !
- Re-definition of study hypotheses:

  1. PCV-7 reduces VT insertions due to recurrent AOM

  2. PCV-7 reduces the risk of complicated AOM

BACKGROUND

- AOM is the 2nd most common disease among children in the Western world
- Pneumococci are the most prevalent pathogens
- 1/3 of these children develop recurrent AOM (rAOM) (especially children < 2 years)
- Treatment: VT insertion
- 2007: PCV-7 was introduced in Denmark

PURPOSE

- Is the introduction of the pneumococcal conjugate vaccine in Denmark associated with a decrease in the rate of VT insertions in children below the age of two years?

METHODS

- Patients: All children aged 0-2 years in Central Denmark Region treated with first time VT insertion between 2001-2012 (National Health Services Registry)
- Assumption: R-AOM is the most common indication for VT insertion in this age-group
- Statistics: Age and sex adjusted annual incidence rates with 95% CI

PATIENTS

- 27,837 children aged 0-2 years had their first VT between 2001 and 2012
- Mean age: 14.8 months
- 59.2 % boys

VACCINE COVERAGE

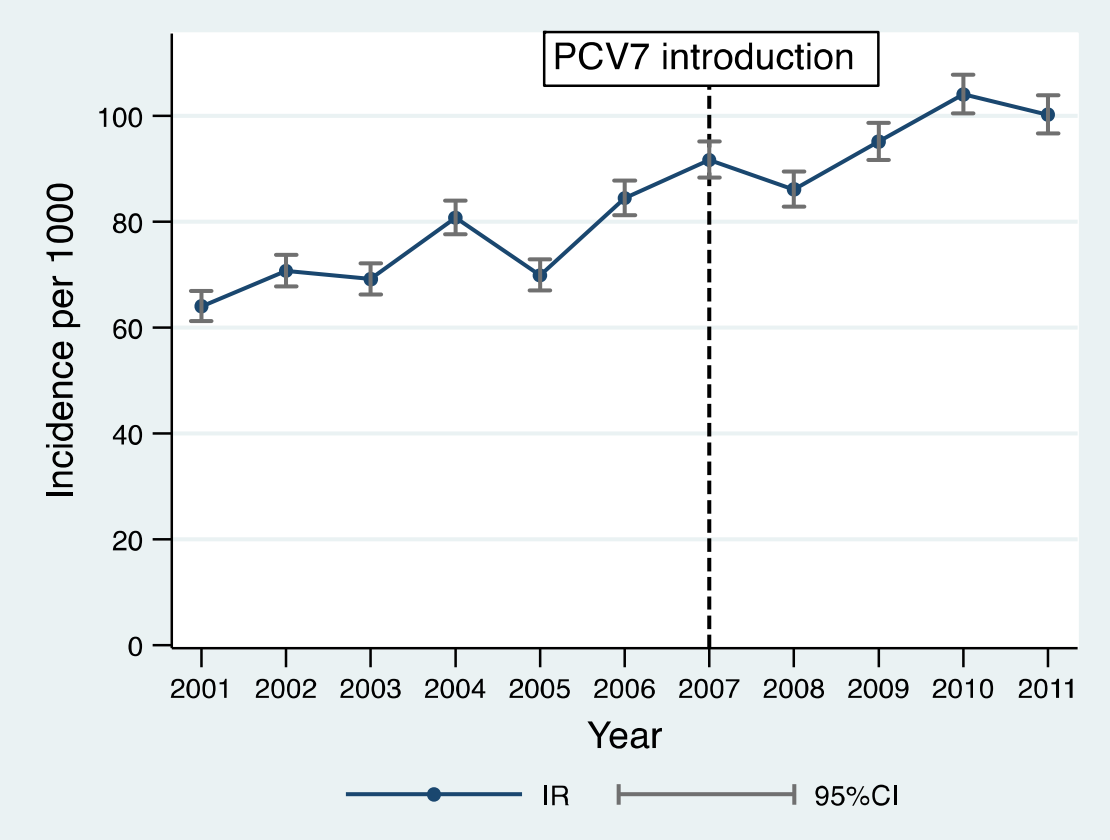
IN Central Denmark Region

Birth cohort	1st dose	2nd dose	3th dose
2007-2011	86-93 %	82-93 %	81-92 %
Catch-up program	51-71 %	51-71 %	51-71 %

Coverage is high!

RESULTS

ANNUAL INCIDENCE

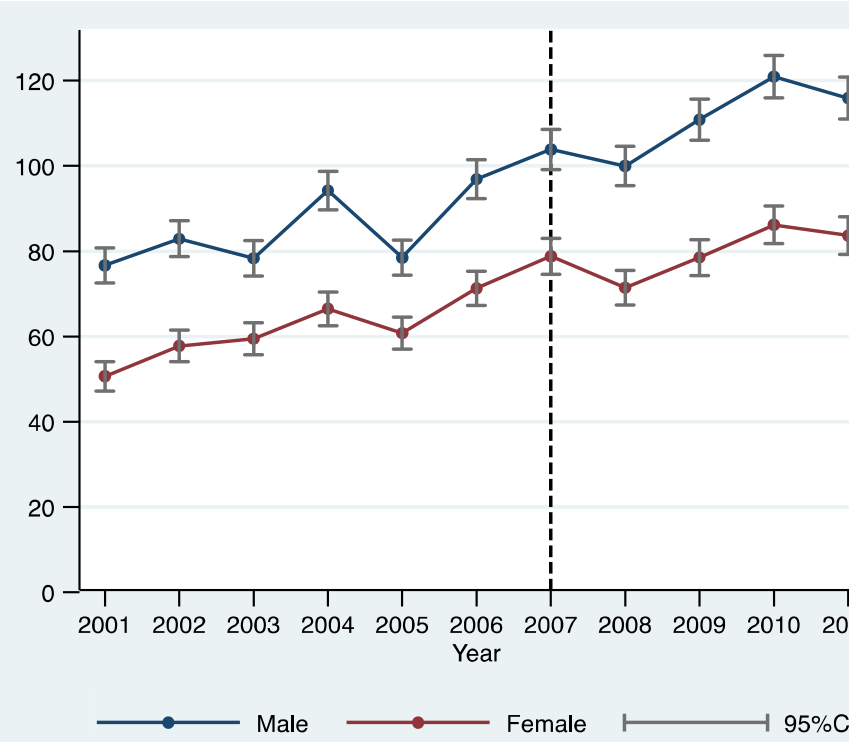


IRR= 1.27 (95%CI 1.24-1.30)

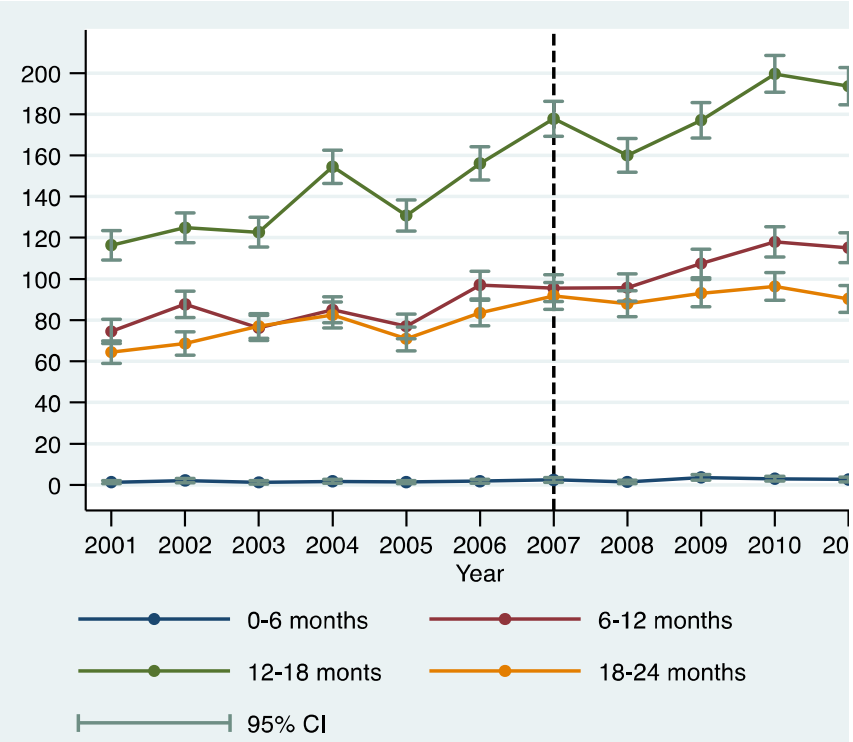
RESULTS

AGE- AND GENDER STRATIFIED

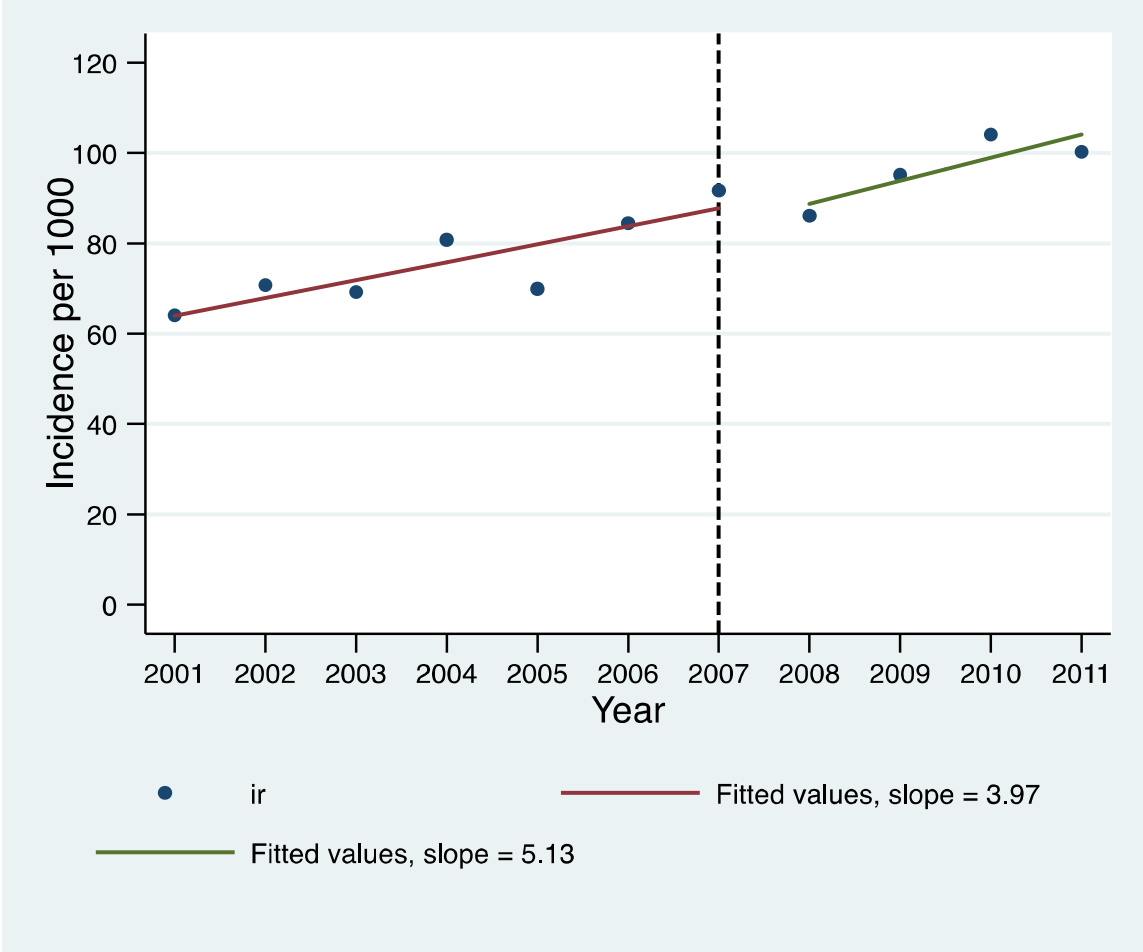
Boys and girls



Age stratified



"BACKGROUND TREND"



DISCUSSION

Strengths

- Populations based → all children included
- Danish system → children from all social layers included

Limitations

- We don't know the effect of changes in other risk factors.
- No knowledge of the microbiology

DISCUSSION

NO DECREASE – WHY?

- Serotype replacement?
- Changes in other risk factors?
- Changes in indication?
- Increased medical care utilization?
- Increased pressure from parents?

- No effect of the vaccine?

CONCLUSION

- The implementation of PCV-7 in the Danish childhood immunization program did not **correlate** with a lower rate of VT insertions
- Rates of VT insertions have increased
- There could be several reasons for the increase

Thank you for your attention