VI Congresso Regionale FIMP - Marche

The best five 2015

fernando maria de benedictis

Journal consultation (2015)

New England Journal of Medicine
Lancet
Lancet Respiratory Medicine
Blue Journal (AJRCCM)
European Respiratory Journal
Thorax
Pediatric Pulmonology
Archives of Diseases in Childhood
Journal of Pediatrics
Pediatrics
JAMA Pediatrics

The track

Background

Method

Results

Comment

1

Community-acquired pneumonia in children

Community-acquired pneumonia in children

Background

- Pneumonia is the leading cause of hospitalization among children in USA and industrialized countries

- Estimates of the incidence and microbiologic causes of hospitalization for CAP among children are limited:
  - use of administrative data
  - diagnostic tests not performed systematically
  - single centers
  - short duration
  - time-effect of vaccines against *S. pneumoniae* and *Hib*
  - improvement in molecular diagnostic testing

Community-acquired pneumonia requiring hospitalization among U.S. children

Jain, NEJM 2015;372:835

Method

CDC - Etiology of Pneumonia In Community (EPIC)
Multicenter, population-based, active-surveillance study

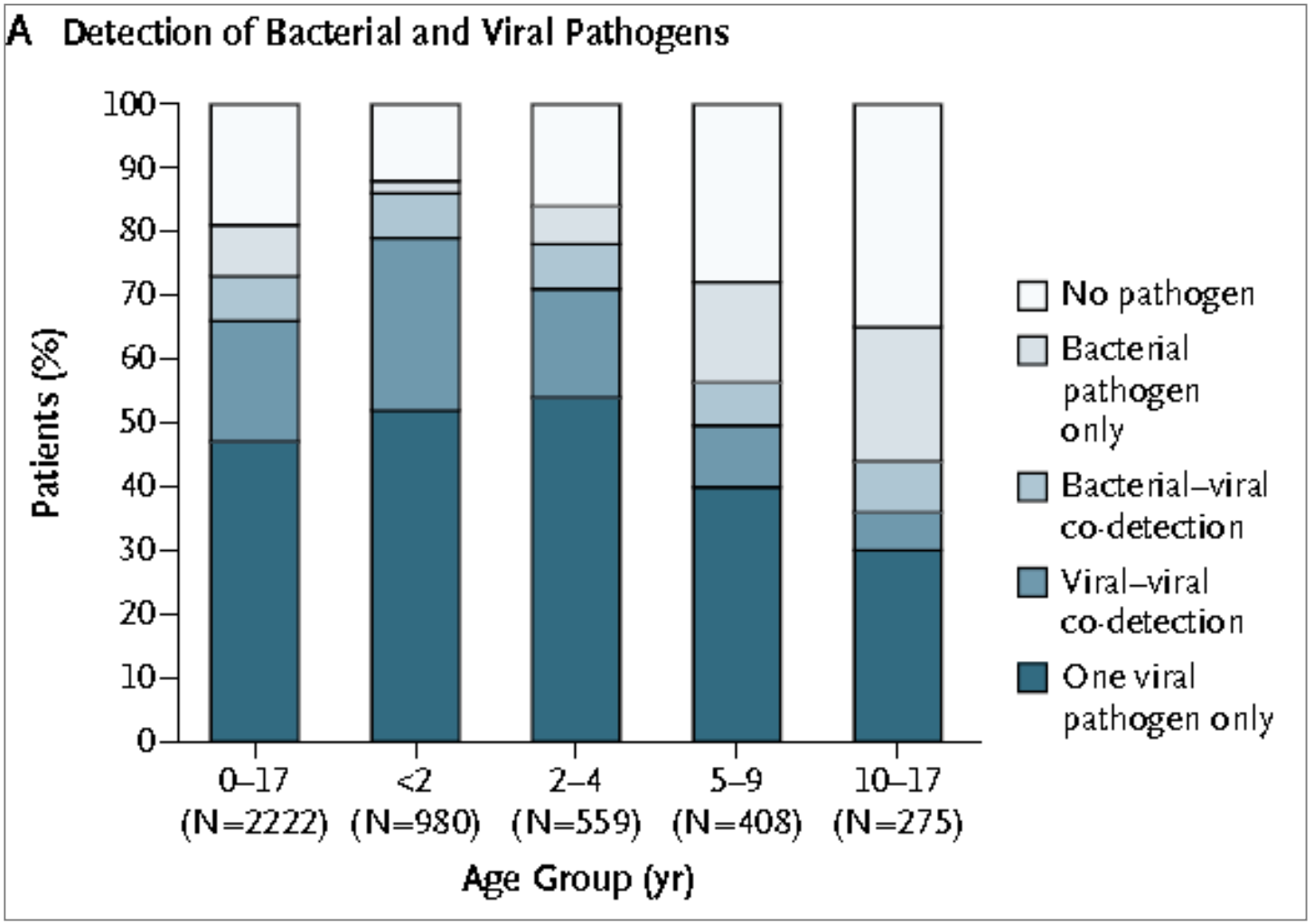
- 2222 children <18 years of age admitted to 3 hospitals with clinical and radiological evidence of pneumonia during 2011-2012

- 726 asymptomatic controls (outpatient elective surgery)

Laboratory testing (blood, pleural fluid, NP/OP swabs):
Gram staining, bacterial culture, PCR, serology

Community-acquired pneumonia requiring hospitalization among U.S. children

Jain, NEJM 2015;372:835



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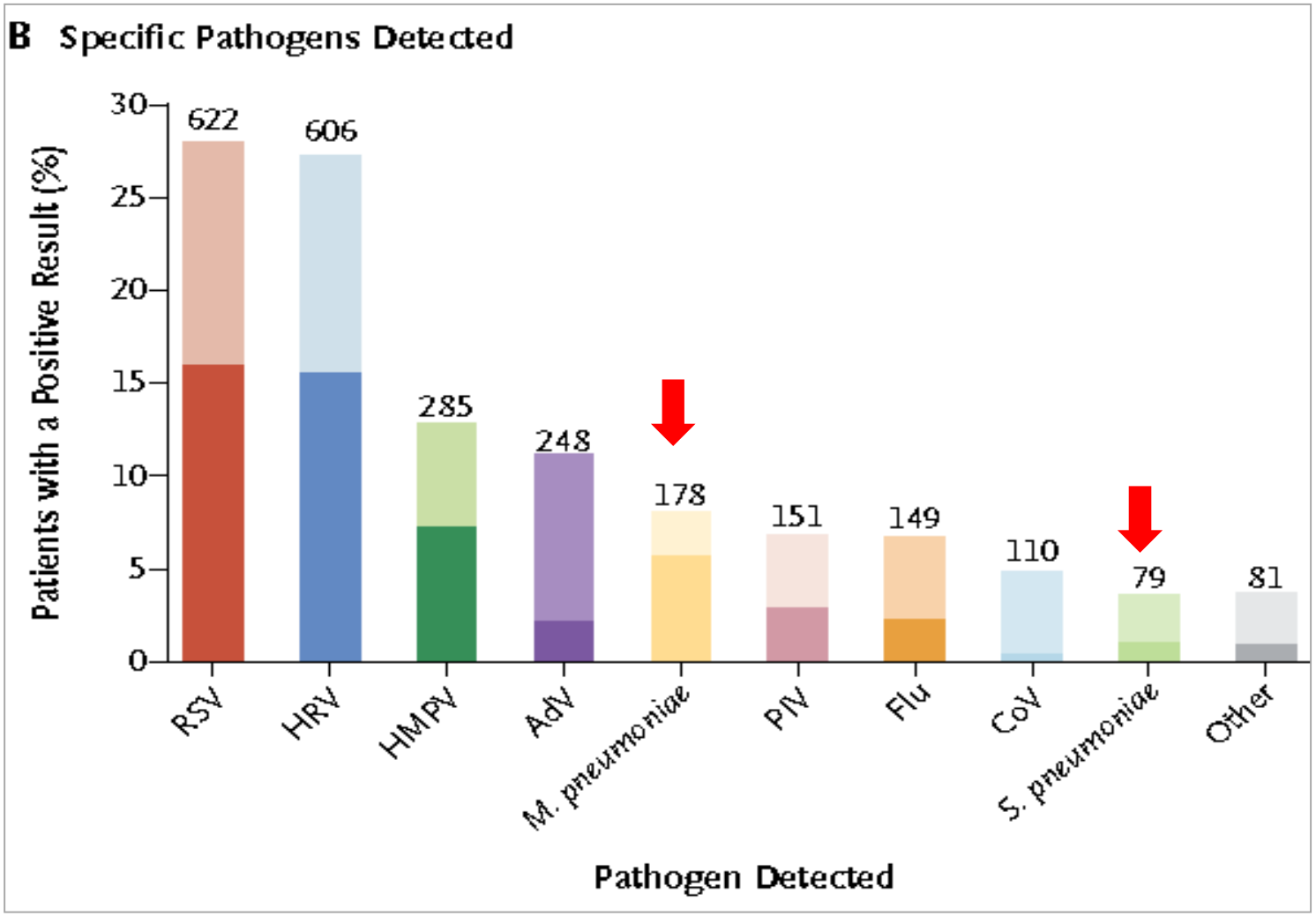

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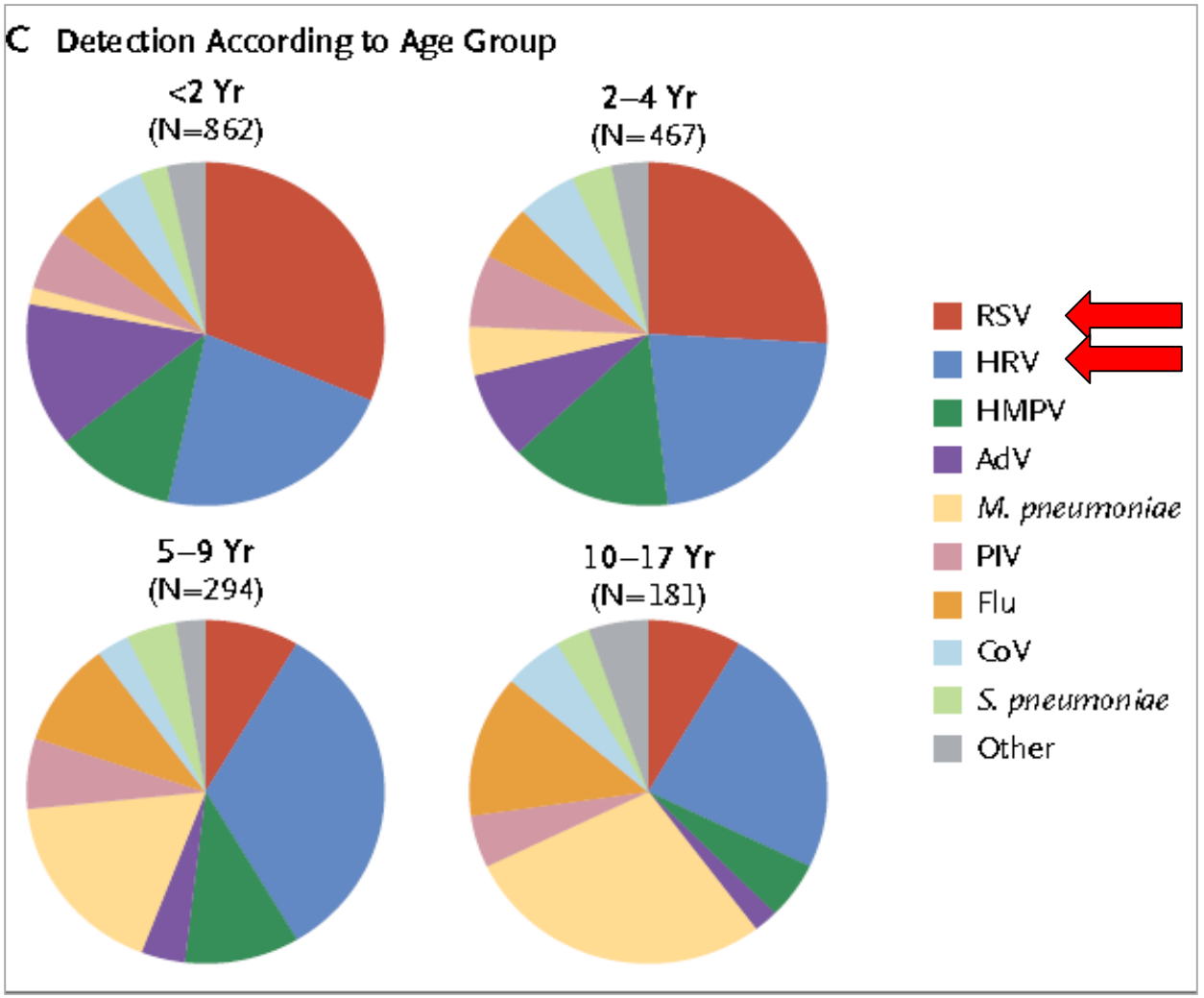

Community-acquired pneumonia requiring hospitalization among U.S. children

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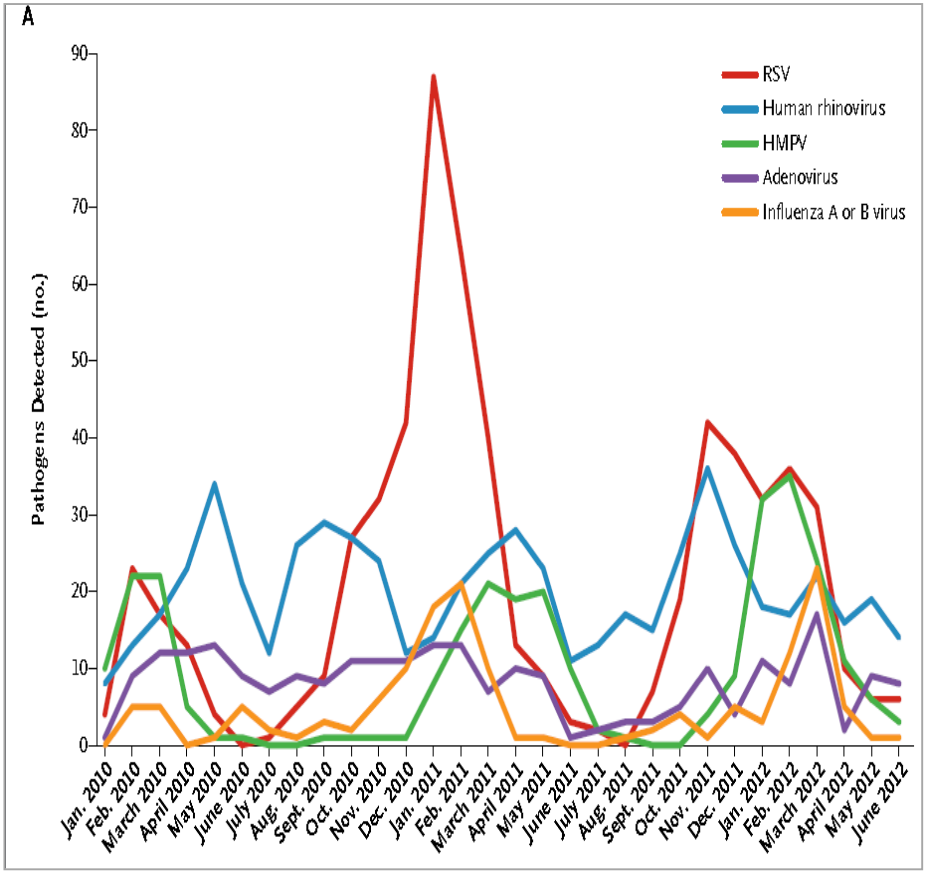
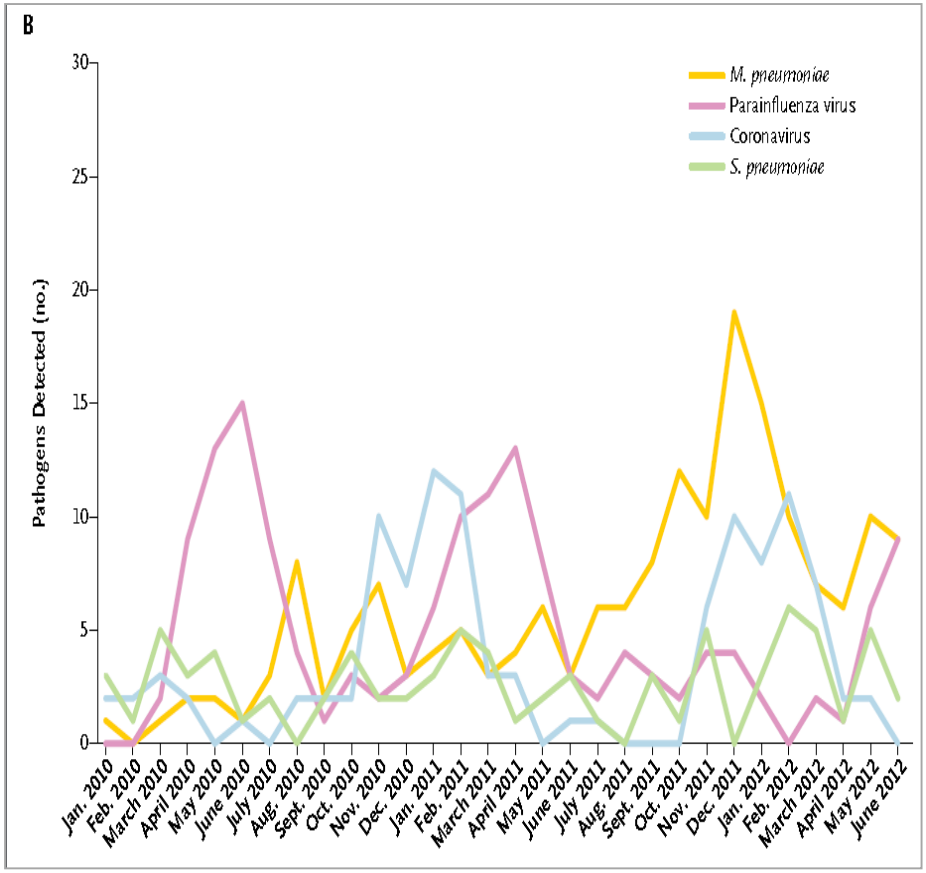




Community-acquired pneumonia in children

Comments

- Annual incidence: 15.7/10.000 children
  (<2 yrs: 62.2; 2-4 yrs: 23.8; 5-9 yrs 10.1; 10-17 yrs: 4.2)
- A pathogen was revealed in 81% of hospitalized CAP; multiple pathogens were detected in 26% of children
- A viral pathogen was detected in 73% of the children and a bacterial pathogen in 15%
- RSV was the most common pathogen detected (28%), with the greatest burden in children younger than 2 yrs
- *M. pneumoniae* accounted for an increasing proportion of cases of CAP with increasing age of children
- The incidence of bacterial pneumonia was lower than previously reported

2

Air quality and lung development

Air quality and lung development

Background

- Exposure to ambient air pollution and lung function impairment in children is well established
- Reduced lung function in childhood has been associated with an increased risk of asthma
- Reduced lung function in healthy adults has been associated with an increased risk of cardiovascular disease and mortality

? *Is the reduction in air pollutants associated with improvements in children's respiratory health*

Association of improved air quality with lung development in children

Gauderman, NEJM 2015;372:905

Method

Part of the 20-year Children's Health Study, South California

- 3 cohorts of children recruited from 5 study communities and followed over the same 4-year age range (11 to 15 yrs), but during different periods (1994-1997; 1997-2000; 2007-2010)
- Questionnaires and lung function tests obtained annually
- Air pollutants (NO2, $PM_{2.5}$, PM_{10}) continuously monitored

Study participants

Cohort C: n. 669; Cohort D: n. 588; Cohort E: n. 863

Association of improved air quality with lung development in children

Gauderman, NEJM 2015;372:905

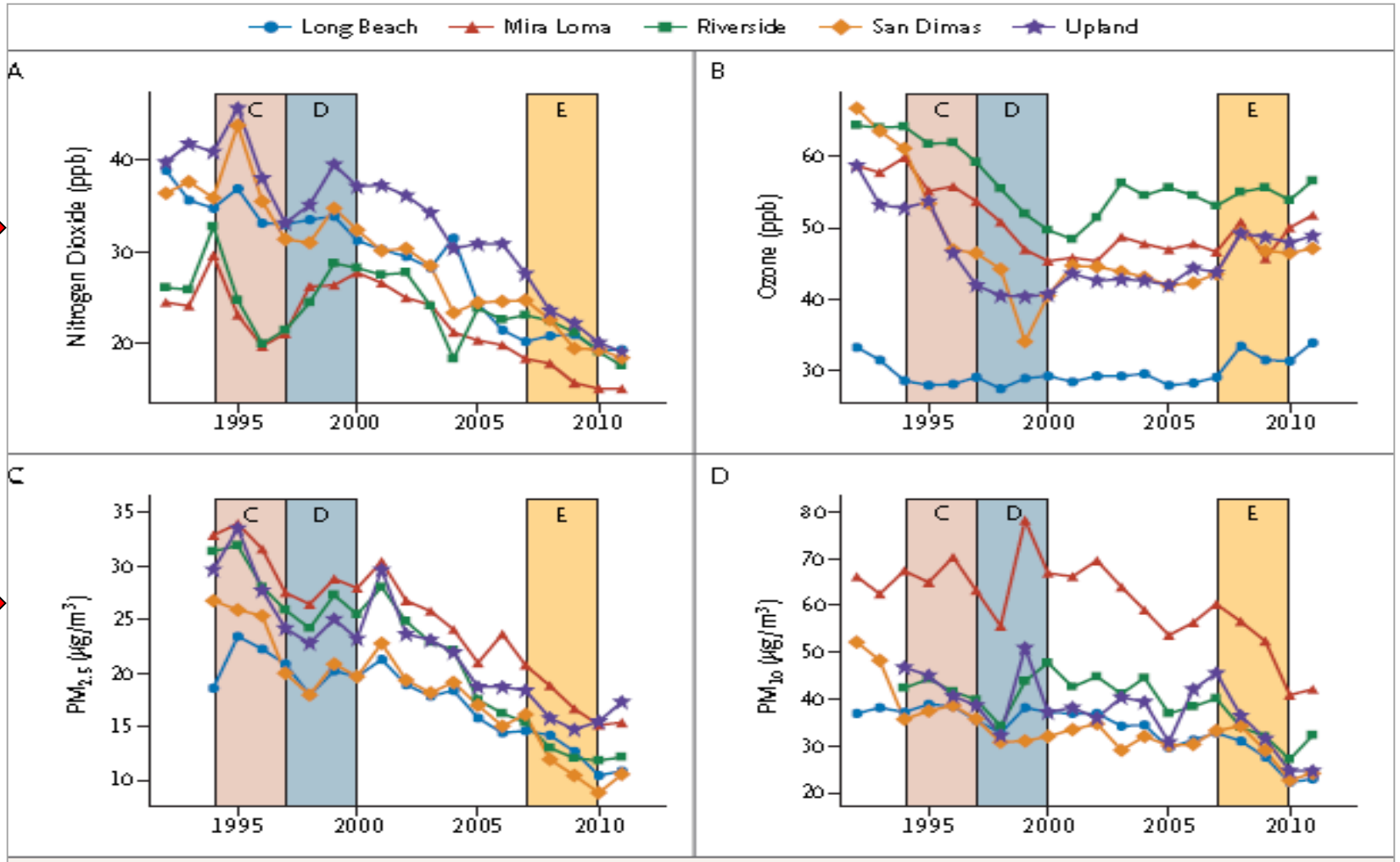
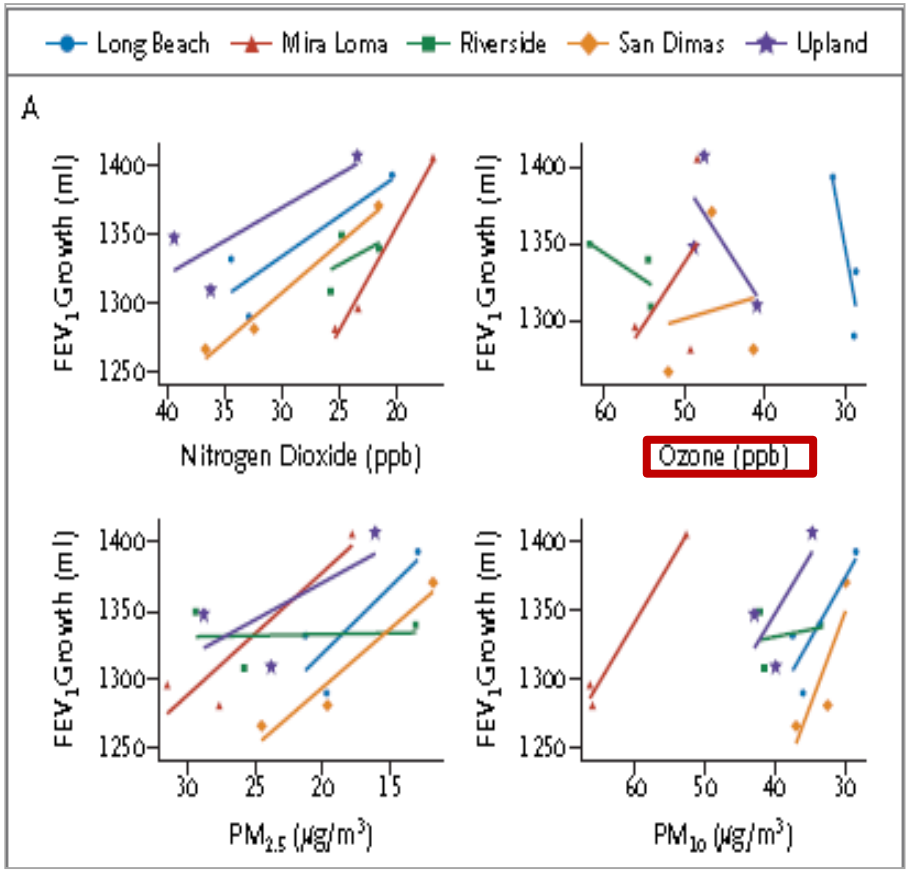
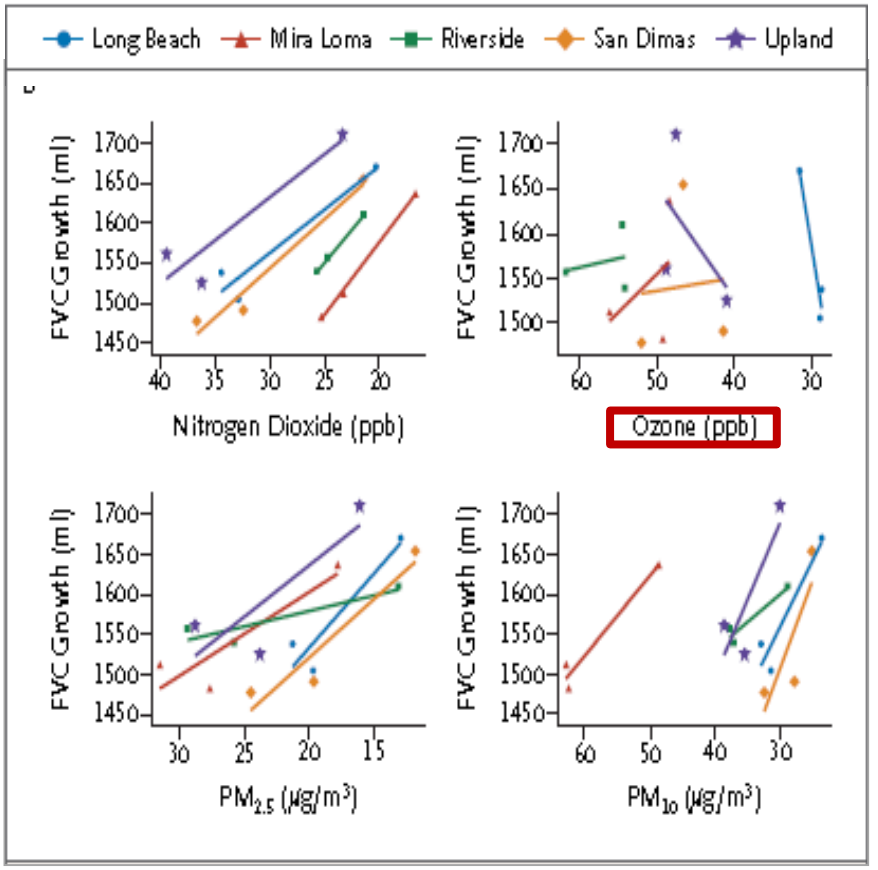


Figure 1. Levels of Four Air Pollutants from 1994 to 2011 in Five Southern California Communities.

Association of improved air quality with lung development in children

Gauderman, NEJM 2015;372:905

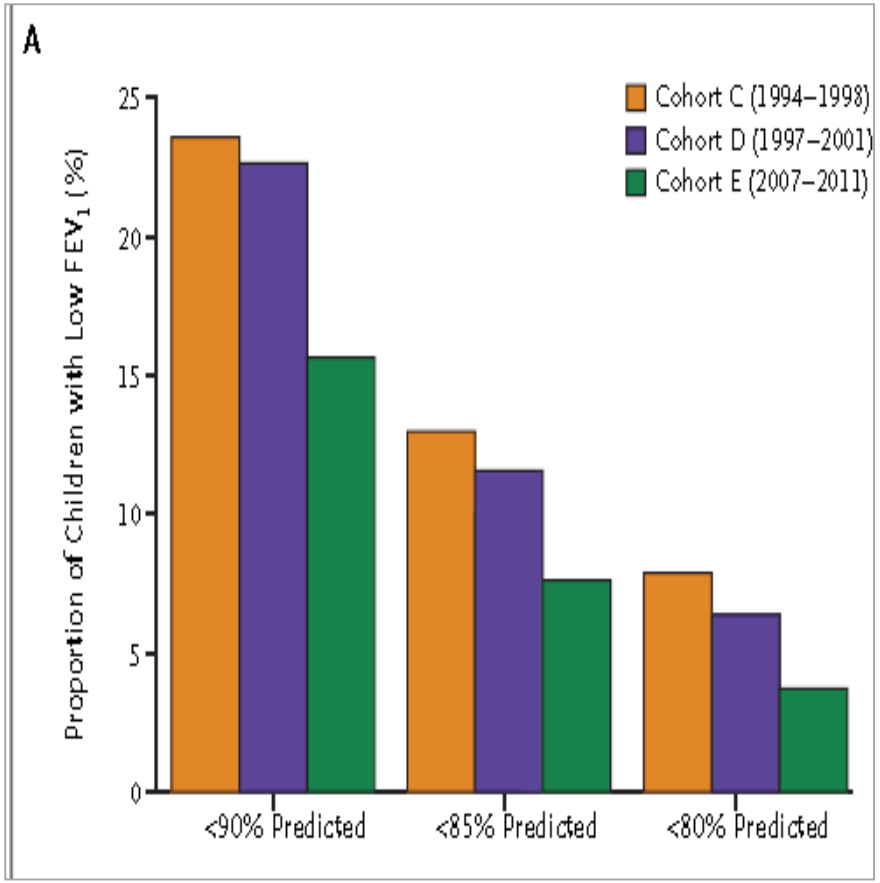


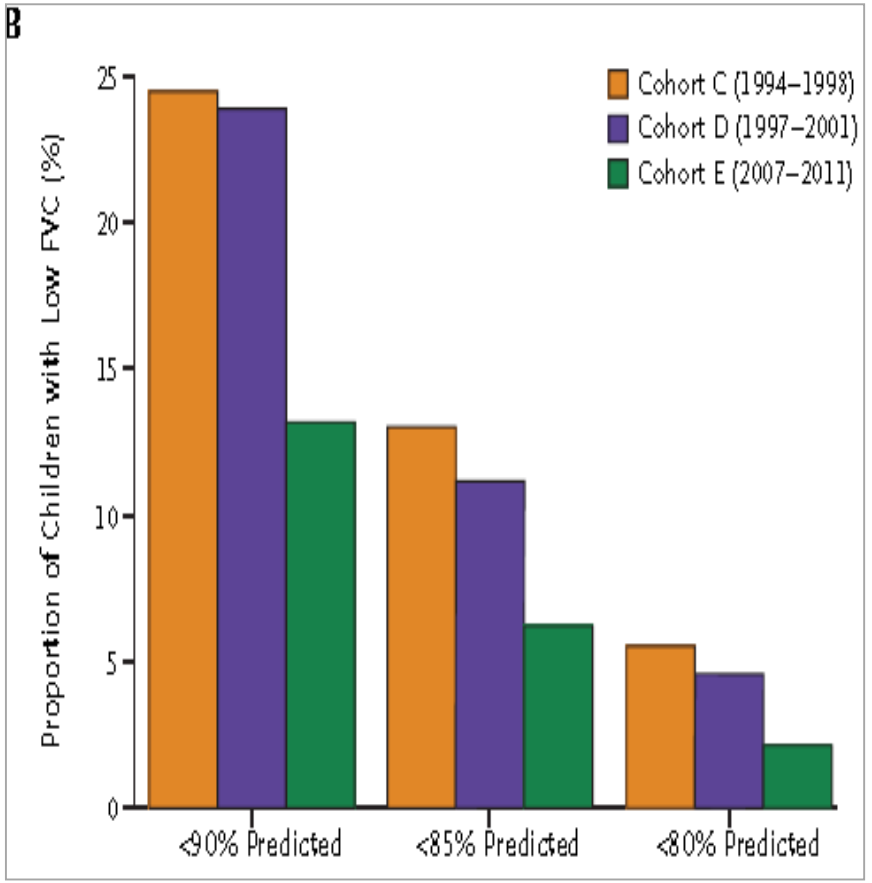


These associations were observed in boys and girls, in Hispanic and non-Hispanic, and in children with and without asthma.

Association of improved air quality with lung development in children

Gauderman, NEJM 2015;372:905





Air quality and lung development

Comments

- Improved air quality in California is associated with clinically significant improvements in childhood lung function growth
- **Intrauterine and early postnatal exposure to outdoor air pollution and lung function at preschool age**

  Morales, Thorax 2015,70:64
- The pollutants associated with lung function growth (NO2, $PM_{2.5}$, PM_{10}) are products of primary fuel combustion and were among those effectively reduced through policy strategies
- All efforts and policy strategies addressed to improve air quality are largely justified and should be implemented

3

Exercise-induced bronchoconstriction and exercise-induced laryngeal obstruction

Exercise-induced bronchoconstriction and exercise-induced laryngeal obstruction

Background

- Exercise-induced respiratory symptoms (dyspnea, wheezing) are common among adolescents
- Two possible causes are exercise-induced bronchoconstriction (EIB) and exercise-induced laryngeal obstruction (EILO)
- EIB and EILO can have similar symptomatology
- For the correct diagnosis and treatment of adolescents with exercise-induced symptoms, it would be useful to know the prevalence of EIB and EILO and the differences in clinical characteristics

Exercise-induced bronchoconstriction and exercise-induced laryngeal obstruction in a general adolescent population

Johansson, Thorax 2015;70:57

Method

- All 12-13-year-old adolescents in the city of Uppsala
- 2-phases cross-sectional study over a 2-year period

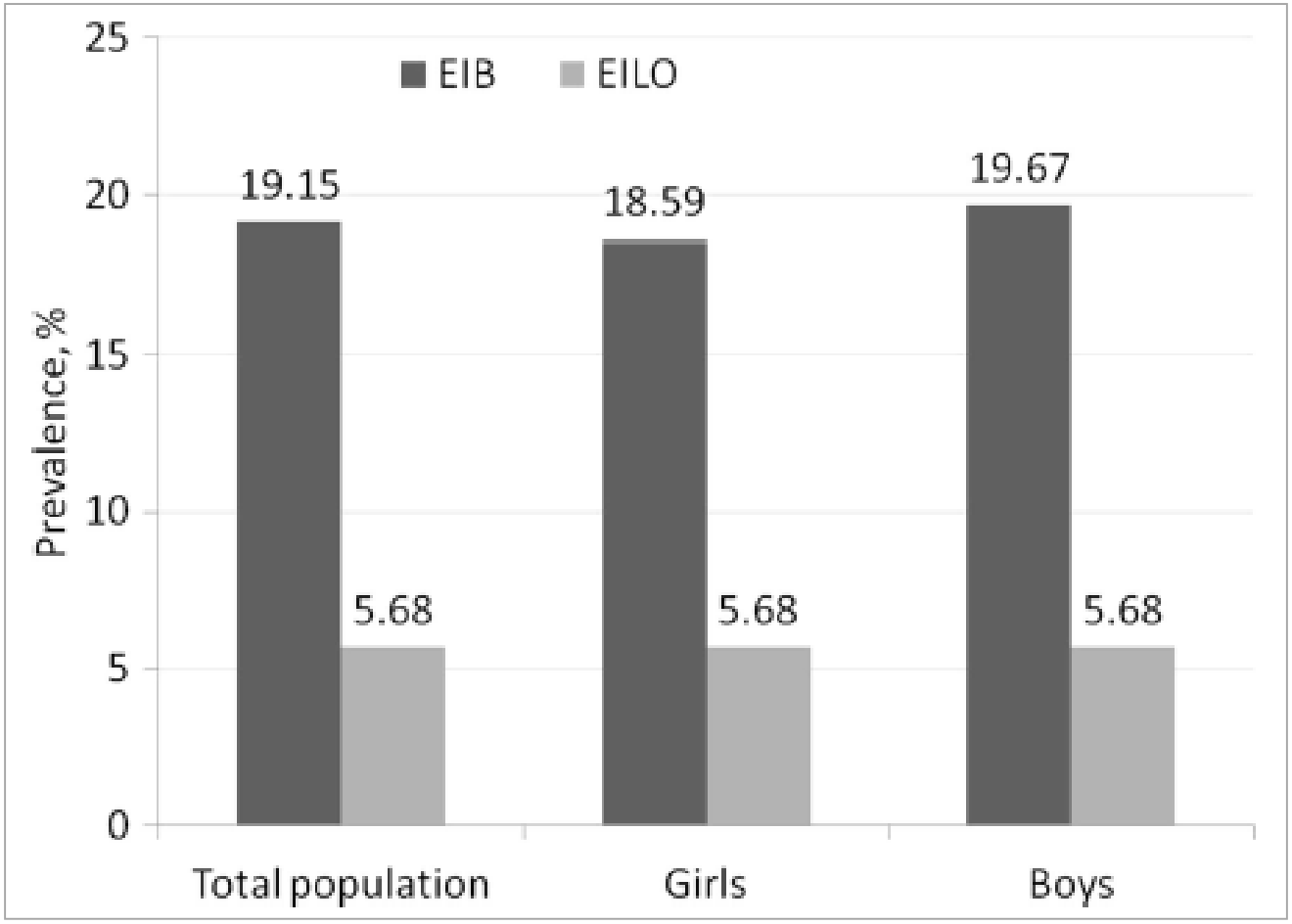
Screening phase:
Questionnaire on the history of exercise-induced dyspnea to 2309 subjects
- Positive responders (PR): n. 330
- Negative responders (NR): n. 1979

Clinical phase:
Randomly selection of 99 PR and 47 NR (controls)

Testing:
Exercise-induced bronchoconstriction test (EIB) and continuous laryngoscopy exercise test (CLE) in separate days

Exercise-induced bronchoconstriction and exercise-induced laryngeal obstruction in a general adolescent population

Johansson, Thorax 2015;70:57



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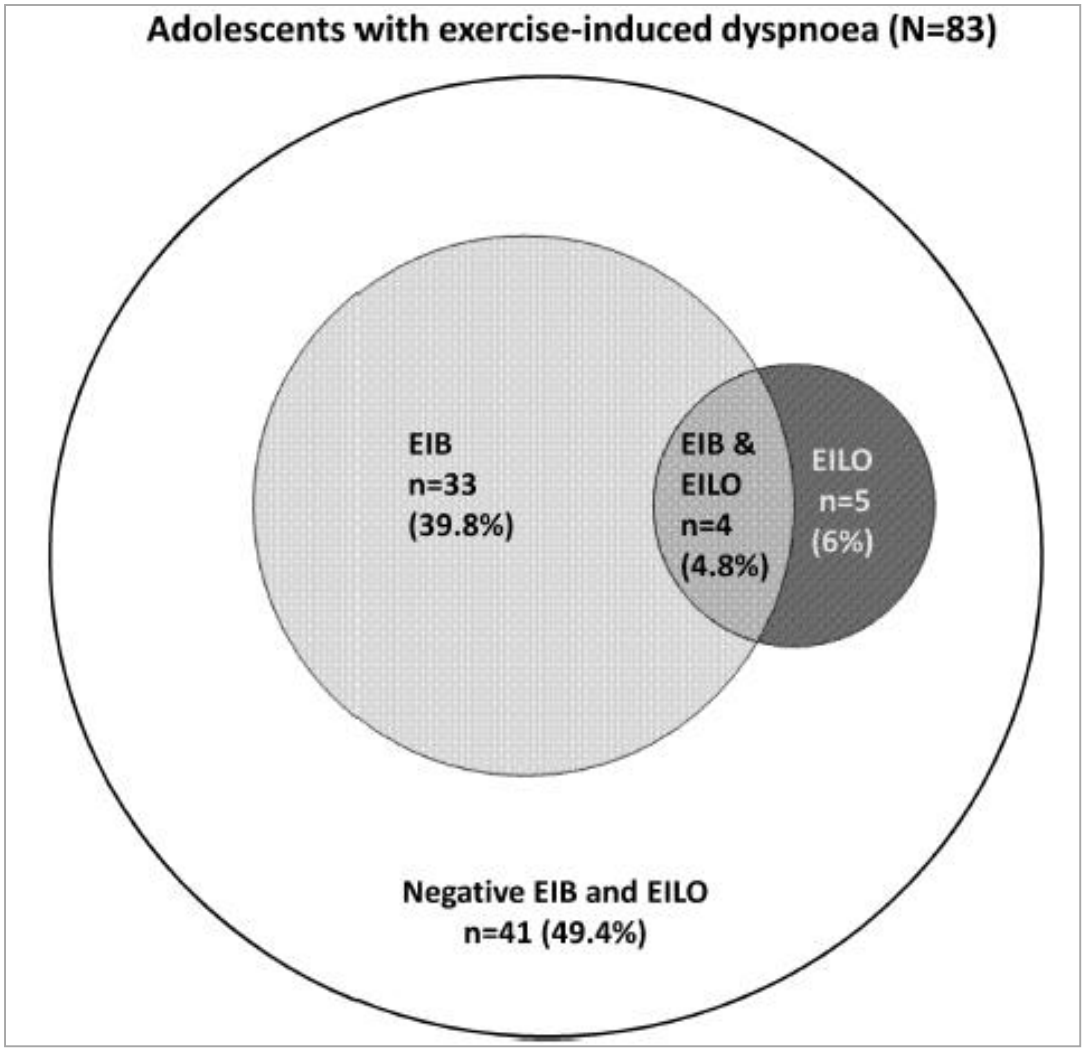

Exercise-induced bronchoconstriction and exercise-induced laryngeal obstruction in a general adolescent population

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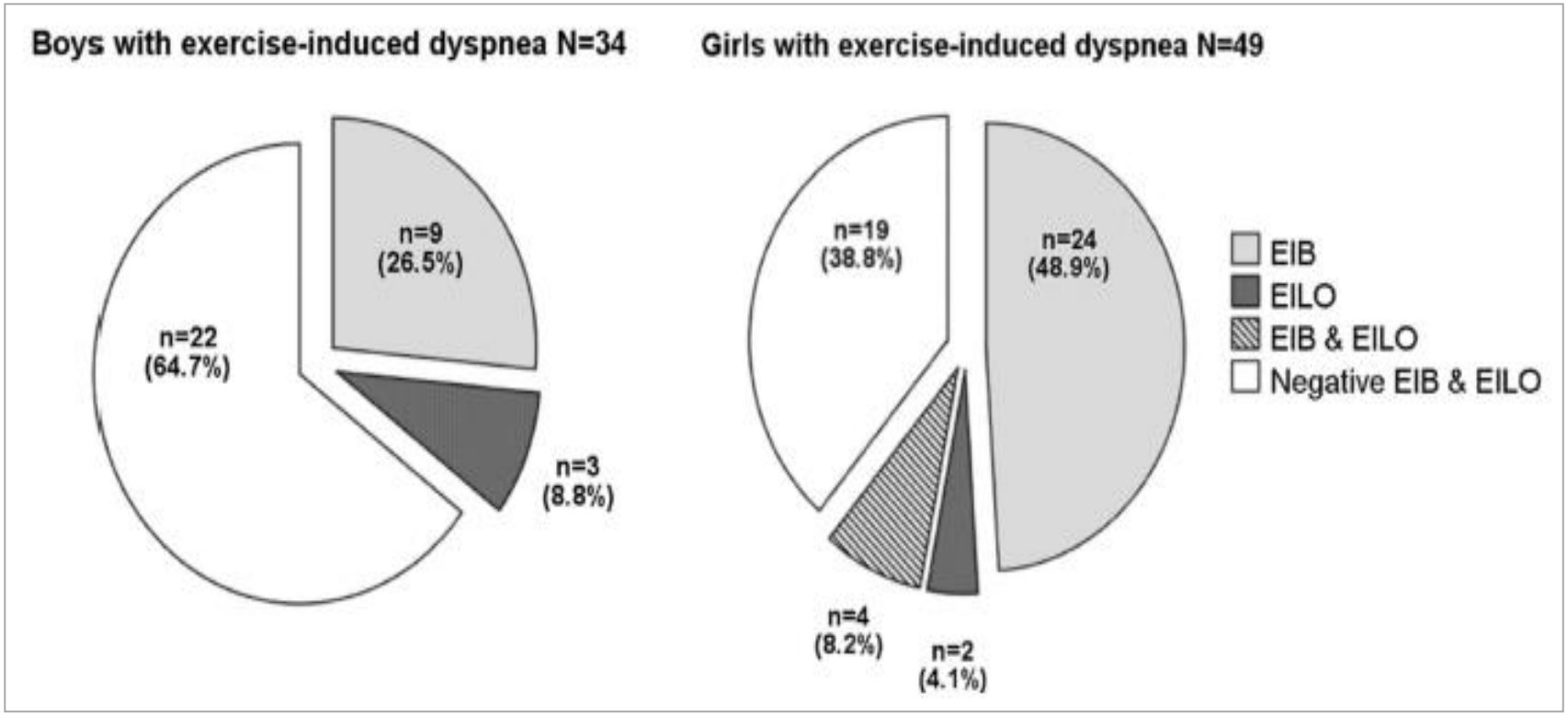


Exercise-induced bronchoconstriction and exercise-induced laryngeal obstruction

Comments

- EIB and EILO are common in a population of adolescents, with no gender differences
- In half of the subjects with a history of exercise-induced dyspnea, neither EIB nor EILO could be demonstrated; this was more common in boys than in girls
- Half of adolescents with EILO also had EIB.
- **Clinical implications**: Both in terms of diagnostic and therapeutic strategies

4

Asthma exacerbations

Asthma exacerbations

Background

- Asthma exacerbations remain a major factor for morbidity despite optimal medical treatment
- Seasonal pattern exist in children (highest in the fall and lowest in the summer)
- Understanding which characteristics are associated with an increased risk for asthma exacerbations is a critical step to prevent these events

? *May specific patients' characteristics be associated with seasonal asthma exacerbations*

Seasonal risk factors for asthma exacerbations among inner-city children

Teach, JACI 2015;135:1465

Method

- Analysis of risk factors for exacerbations in control group participants from 2 recent trials: ACE study (12-20 yrs) and ICATA study (6-20 yrs)
- Asthma exacerbation: need for systemic corticosteroids, hospitalization, or both

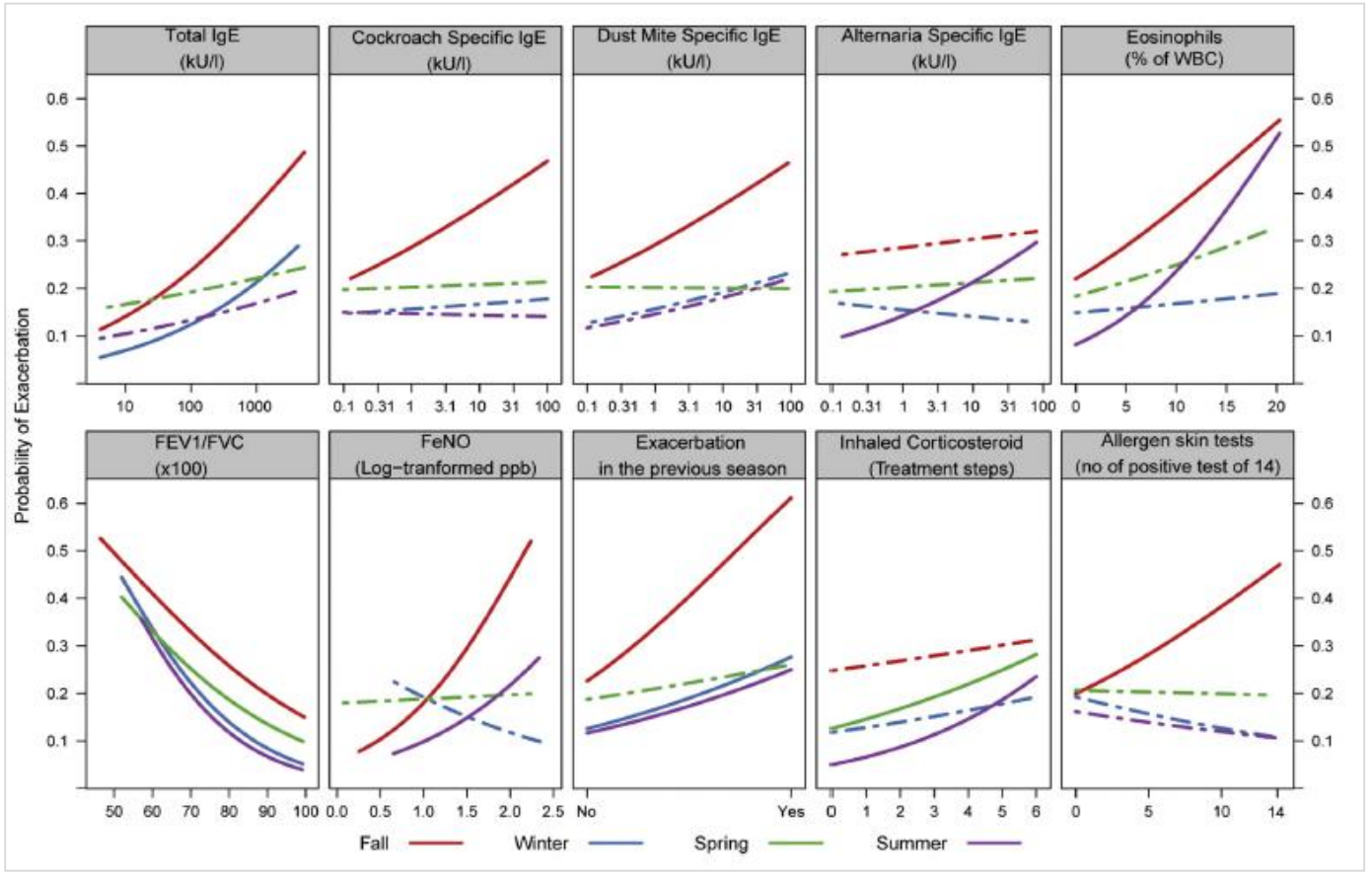
Seasonal risk factors for asthma exacerbations among inner-city children

Teach, JACI 2015;135:1465

400 children aged 6 to 20 yrs

Exacerbations

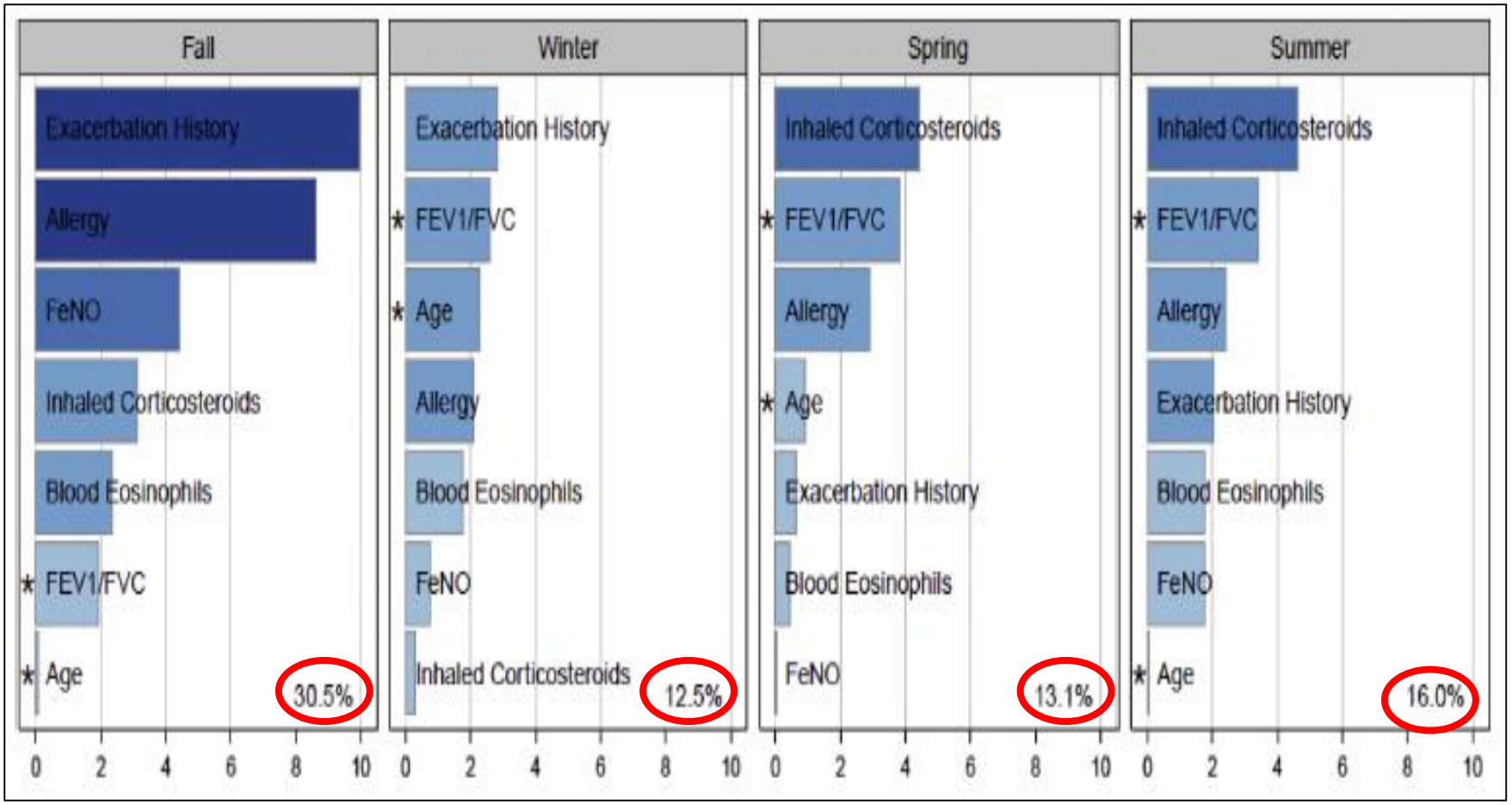
Fall 28%
Winter 16%
Spring 20%
Summer 14%



Univariate analysis

Seasonal risk factors for asthma exacerbations among inner-city children

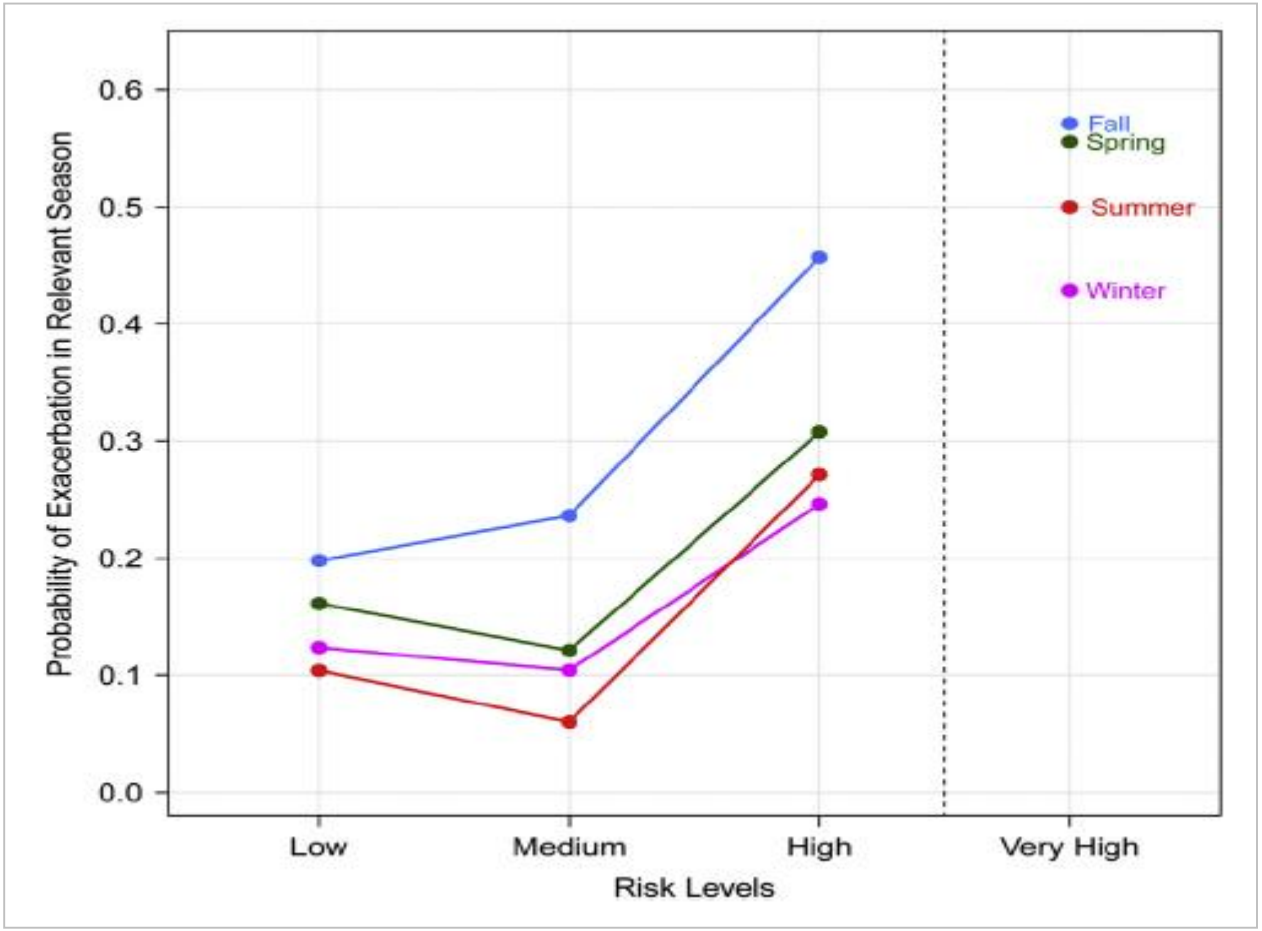
Teach, JACI 2015;135:1465



Multivariate analysis

Seasonal risk factors for asthma exacerbations among inner-city children

Teach, JACI 2015;135:1465



Asthma exacerbations

Comments

- The ability to predict sthma exacerbations based on commonly used characteristics of patients varies greatly by season (highest in the fall)
- Pedictors vary across seasons
- Other highly relevant factors work in combination with viral infections to trigger exacerbations
- The level of patient's risk factors in the immediately preceding season is important in predicting an asthma exacerbation in the subsequent season
- **Clinical implication**: Informations on characteristics of individual patients might be beneficial in strategies to prevent these seasonal events

5

Systemic steroids for treatment of acute wheezing

Systemic steroids for treatment of acute wheezing

Background

- Rhinovirus-induced early wheezing is an important risk factor for recurrent wheezing and later asthma
- No efficacy of systemic corticosteroids in the treatment of early wheezing episodes
- *Post hoc* analysis of RCT data showed that oral prednisolone during the first rhinovirus-induced wheezing episode decreased the risk of recurrent wheezing over the next 7 yrs

? Does prednisolone treatment of the first rhinovirus-induced wheezing episode have any short- or long-term effect

Short- and long-term efficacy of prednisolone for first acute rhinovirus-induced wheezing episode

Jartti, JACI 2015;135:691

Method

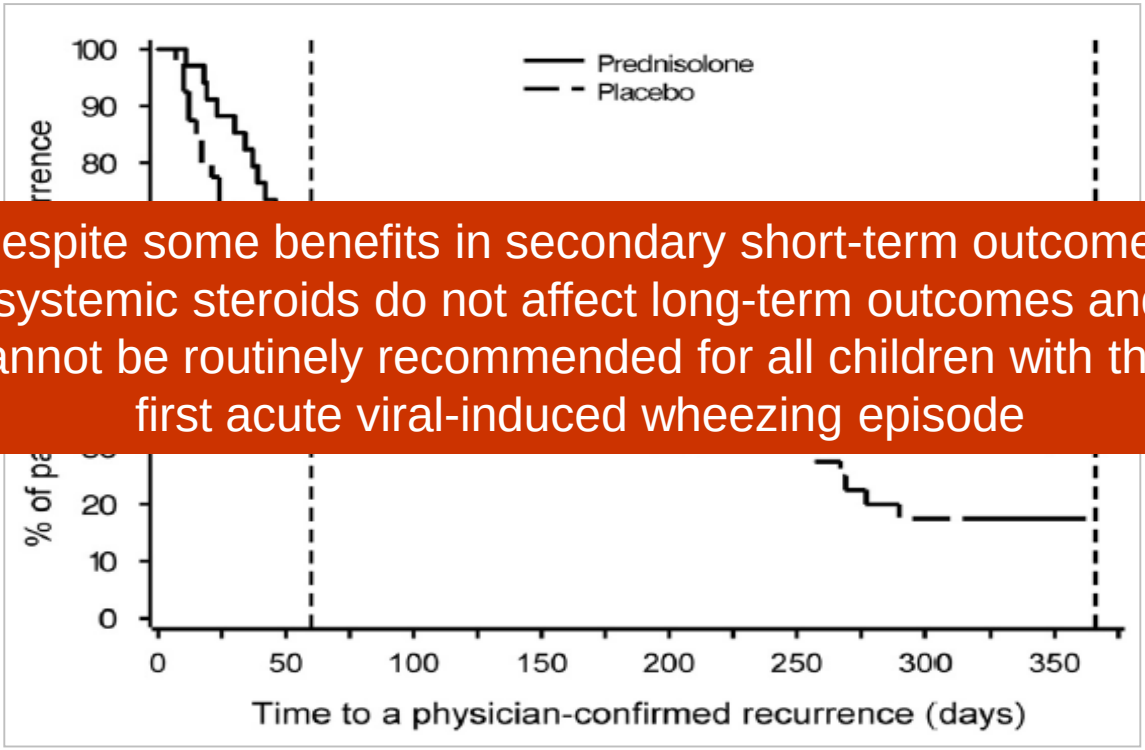
- Infants with first wheezing episode and signs of LRTI
- Rhinovirus detected in nasopharyngeal aspirate by PCR
- Prednisolone (2 mg/kg for 3 days) *vs* placebo
- Respiratory symptoms recorded in a daily diary for 12 months
- Scheduled follow-up visits at 2 weeks, 2 months and 12 months

➢ Main outcome: n. of physician-confirmed wheezing episodes

Short- and long-term efficacy of prednisolone for first acute rhinovirus-induced wheezing episode

Jartti, JACI 2015;135:691

79 children

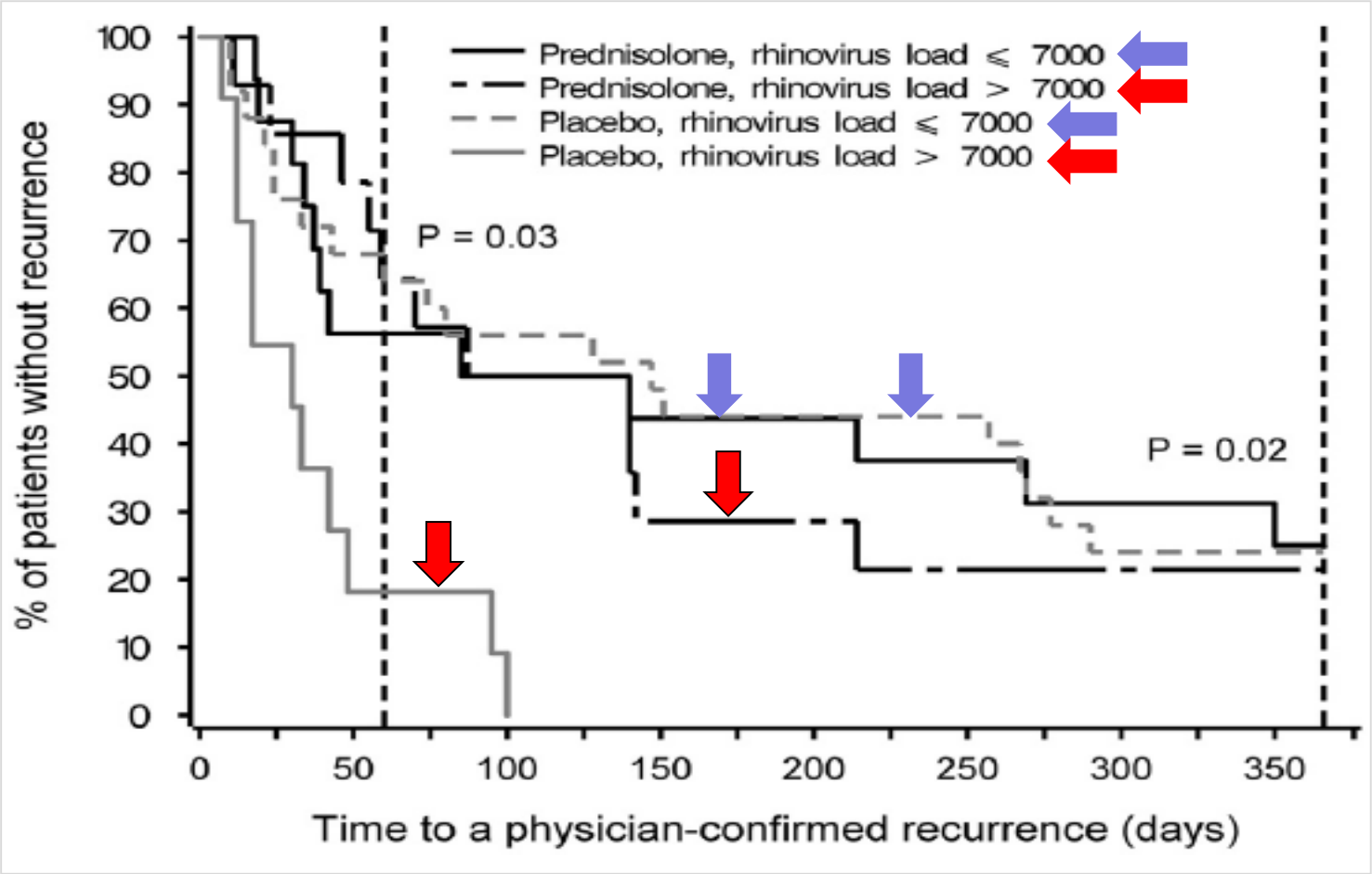


Despite some benefits in secondary short-term outcomes, systemic steroids do not affect long-term outcomes and cannot be routinely recommended for all children with their first acute viral-induced wheezing episode

***Secondary outcomes*:**
- Less cough, rhinitis and noisy breathing in the active group in the acute phase
- No difference in outpatient visits, hospitalization and corticosteroid use during follow up

Short- and long-term efficacy of prednisolone for first acute rhinovirus-induced wheezing episode

Jartti, JACI 2015;135:691



Systemic steroids for treatment of acute wheezing

Comments

- Prednisolone cannot be routinely recommended for all young children experiencing their first acute, moderate-to-severe, rhinovirus-induced wheezing episode
- Prednisone may be beneficial in a subgroup of children with high viral loads
- **Clinical implications**: It difficult to believe that this study may actually inform clinical practice. Bedside quantitative rhinovirus detection test in the future?

Am J Respir Crit Care Med Vol 185, Iss. 1, pp 12–23, Jan 1, 2012

Concise Clinical Review

Corticosteroids in Respiratory Diseases in Children

Fernando M. de Benedictis[1] and Andrew Bush[2]

[1]Department of Mother and Child Health, Salesi Children's Hospital, Ancona, Italy; and [2]Royal Brompton & Harefield NHS Foundation Trust, London, United Kingdom

Short burst OCS must not be given in the community for attacks of viral wheeze. They should be considered only in young children admitted to a hospital with features strongly suggestive of atopic asthma (eg, a combination of multi-trigger wheeze, severe eczema and a family history of atopic asthma) or with very severe bronchodilator-unresponsive wheeze who appear to need high dependency or intensive care.