Australian National University

Ear infection and its associated risk factors, comorbidity and health service use in Australian children

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Our aim

- Investigate and identify risk factors, co-morbidity and health service use related to ear infection in Australian children
- Better inform management and prevention of ear disease

Known risk factors

- Day care
- Number of siblings/overcrowding
- Whether breastfeed
- Birth weight
- Socio-economic status
- Air pollution/exposed to smoking
- Indigenous background
- Lack of access to medical care

Known co-morbidity

- Fevers
- Respiratory tract infections
- Upper and lower airway infections
- Tonsillopharyngitis

A cross-sectional study

- Health service utilisation at age
  - 4/5 years in 2004
  - 10/11 years in 2010
- LSACs data

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The longitudinal study of Australian children

- Tracking 10,000 children across Australia
- 2 cohorts
  - 0-1 yrs ~ B baby cohort
    - 5,107 children
  - 4-5 yrs ~ K kid cohort
    - 4, 983 children
- LSACs seeks to identify key factors influencing child development

Study design

- 2 stage clustered sampling design
- Randomly selected from Medicare database
- Data collected f-2-f every 2 years
  - 2004; 2006; 2008; 2010
  - Additional between interview mail out surveys
- LSACs broadly representative
  - Some under-representation of
    - Lower educated, single parent, NESB, and families in rental properties
    - An ‘advantaged’ sample

Key questions

- Ear infection
  - Does the child have any of these ongoing problems …. Ear infection (yes, no)
- Other health conditions
  - Does the child have any of these ongoing problems ….
    - E.g. asthma, headache, tonsillitis, ADHD, vision problems, allergies, other infections
- Injury
  - In the last 12 months, how many times did child need medical attention from a doctor or hospital because s/he was hurt or injured (includes hospital casualty, ED, outpatients and visiting nurse in remote areas
- Health service utilisation
  - In the last 12 months, have you used any of these services for the study child
    - GP, ED, outpatients, pediatrics, counsellor, speech path, early education services …

Key risk factors

- Indigenous person
  - 1.94 times more likely to have ear infection; p<.002
- 3 or more siblings at home
  - 0.68 times less likely to have ear infection
- Not breast fed at 3 months
  - 1.25 times more likely to have ear infection; p<.04
- Father smokes more than once a day
  - 1.41 times more likely to have ear infection; p<.02
- Father low school education
  - Only Yr 10-11 1.43 times more likely to have ear infection; p<.003
  - Only </=Yr 9 1.45 times more likely to have ear infection; p<.008

Comorbidities aged 4/5 years

- Has asthma
  - 1.55 times more likely to have ear infection; p<.001
- Has headaches
  - 3.59 times less likely to have ear infection; p<.003
- Has ADHD
  - 3.04 times more likely to have ear infection; p<.001
- Has food or other allergies
  - 1.64 times more likely to have ear infection; p<.002
- Has other disabilities
  - 2.40 times more likely to have ear infection; p<.001
- Has other illnesses
  - 1.87 times more likely to have ear infection; p<.001
- Has other infections
  - 3.87 times more likely to have ear infection; p<.001
- More injuries
  - 1.20 (Incidence Rate Ratio); P<.02

Comorbidities aged 10/11 years

- Has asthma
  - 1.67 times more likely to have ear infection; p<.003
- Has headaches
  - 2.13 times less likely to have ear infection; p<.006
- Has tonsillitis
  - 4.67 times less likely to have ear infection; p<.001
- More injuries
  - 1.20 (Incidence Rate Ratio); P<.02

Health service utilisation and ear infection aged 4/5 years

- GPs:
  - 1.38 times more likely; p<.02
- ED:
  - 1.41 times more likely; p<.011
- Outpatients:
  - 2.08 times more likely; p<.001
- Speech therapy
  - 1.79 times more likely to have ear infection; p<.001

Health service utilisation and ear infection aged 10/11 years

- GPs:
  - 2.76 times more likely; p<.0201
- Pediatrician
  - 1.83 times more likely; p<.001
- Other medical services
  - 1.97 times more likely to have ear infection; p<.024
- Early education services
  - 3.08 times more likely to have ear infection; p<.010
- Speech therapy
  - 3.24 times more likely to have ear infection; p<.001

Observations

- Risk factors among Australian children are consistent with the literature
  - smoking; lack of breast feeding, crowding, day care, culture)
- A variety of health conditions are associated with ear infection
  - Respiratory tract infections; injuries
- Significant additional health service utilisation
  - Supporting a case for earlier and more effective preventive intervetions

Strengths and limitations

- Strengths
  - Size, representativeness of LSACs sample
  - Repeated measures
- Limitations
  - Self report
  - Nature of questions used

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