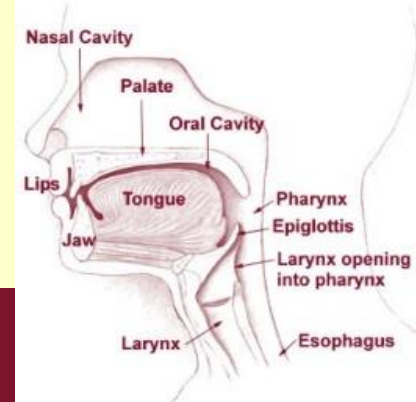# Aspirin use and risk of Head and Neck Cancer: evidence from the INHANCE consortium

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Introduction (1)

- Head and neck cancer (HNC) is the sixth most common cancer worldwide, with more than half a million cases and 300,000 deaths in 2008.

- HNC includes cancer of oral cavity, pharynx (other than nasopharynx) and larynx (ICD-10): C01-06, C08-10, C13-14, C32

Introduction (2)

- Main risk factors are tobacco smoking and alcohol consumption

- Other hypothesised factors include human papillomavirus (HPV) infection, poor diet, poor oral hygiene, low socioeconomic status and genetic factors

Introduction (3)

- Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) are widely used as analgesics and preventative agents for vascular events.

- There is consistent evidence that aspirin use may be protective against colorectal cancer and other neoplasms of the digestive tract and limited evidence for cancers of the breast and prostate (Bosetti et al 2012).

- Few studies have investigated the role of NSAIDs specifically for HNC, and the results are not consistent.

Aim

- The aim of this study was to examine the effect of aspirin on the risk of HNC within the International Head and Neck Cancer Epidemiology (INHANCE) Consortium

INHANCE

- INHANCE is an international collaboration of 65 Universities across four continents and is a repository for the largest collection worldwide of HNC cases and controls (and related biological specimens).

- http://www.inhance.utah.edu

Study Design

- Case-control study
- Cases
  - Oral Cavity
  - Pharynx (other than nasopharynx)
  - Larynx
- Hospital or population controls
  - Matched by age and gender

Study questionnaire

- Interviewer administered structured lifestyle questionnaire

  - Demography
  - Alcohol & tobacco
  - Diet
  - Anthropometry (prior to diagnosis)
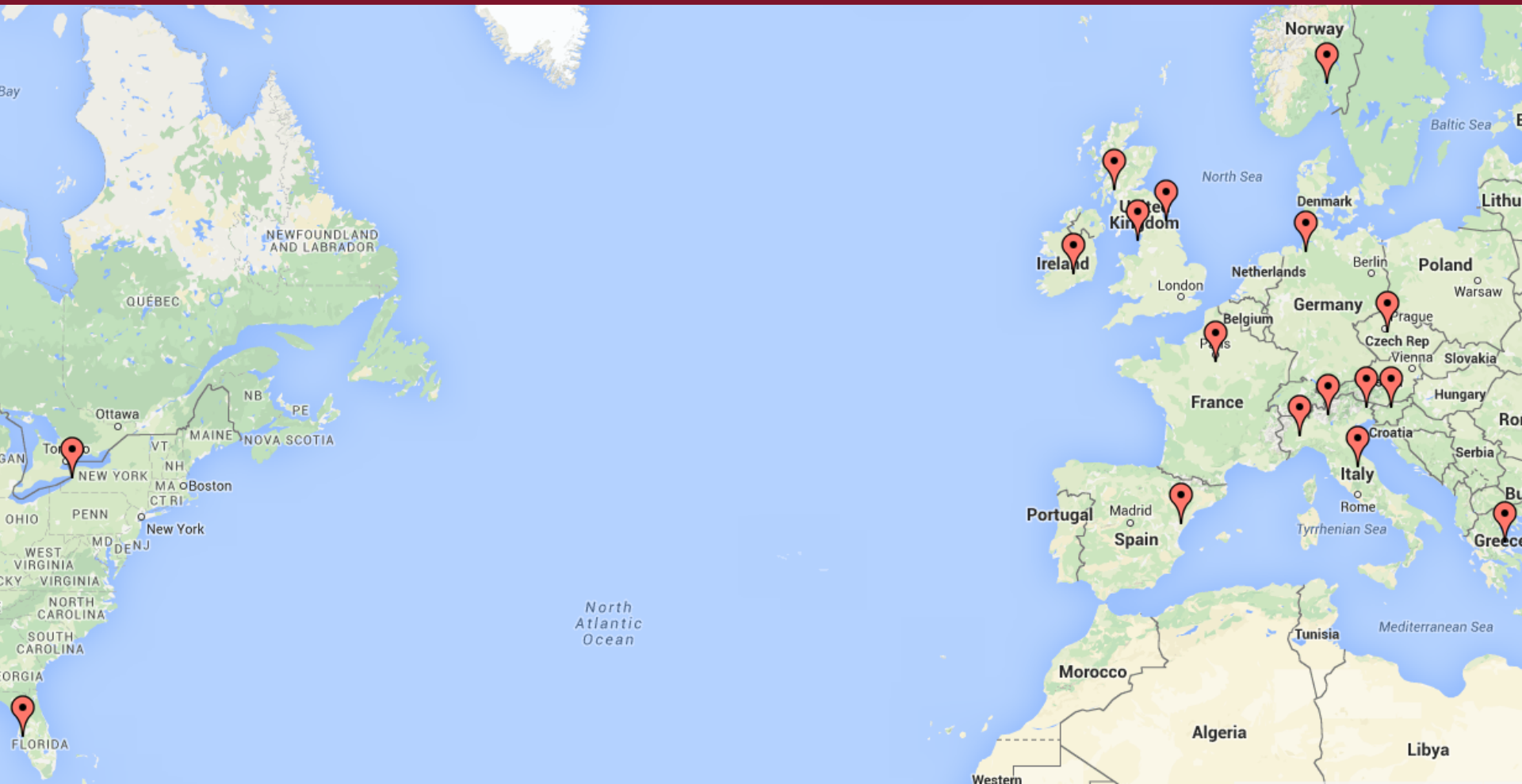 - Aspirin use (ever; regular; frequency; age at start; duration)

Methods

- Logistic regression with studies treated as random effects was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) adjusted for age, gender, education, smoking, alcohol consumption, diet and body mass index.

Results

Cases: 4,372   Controls: 7,361

Results

- 72% were males
- Median age 60 years (18, 95)

Prevalence of regular aspirin use

- Europe   2% - 20%
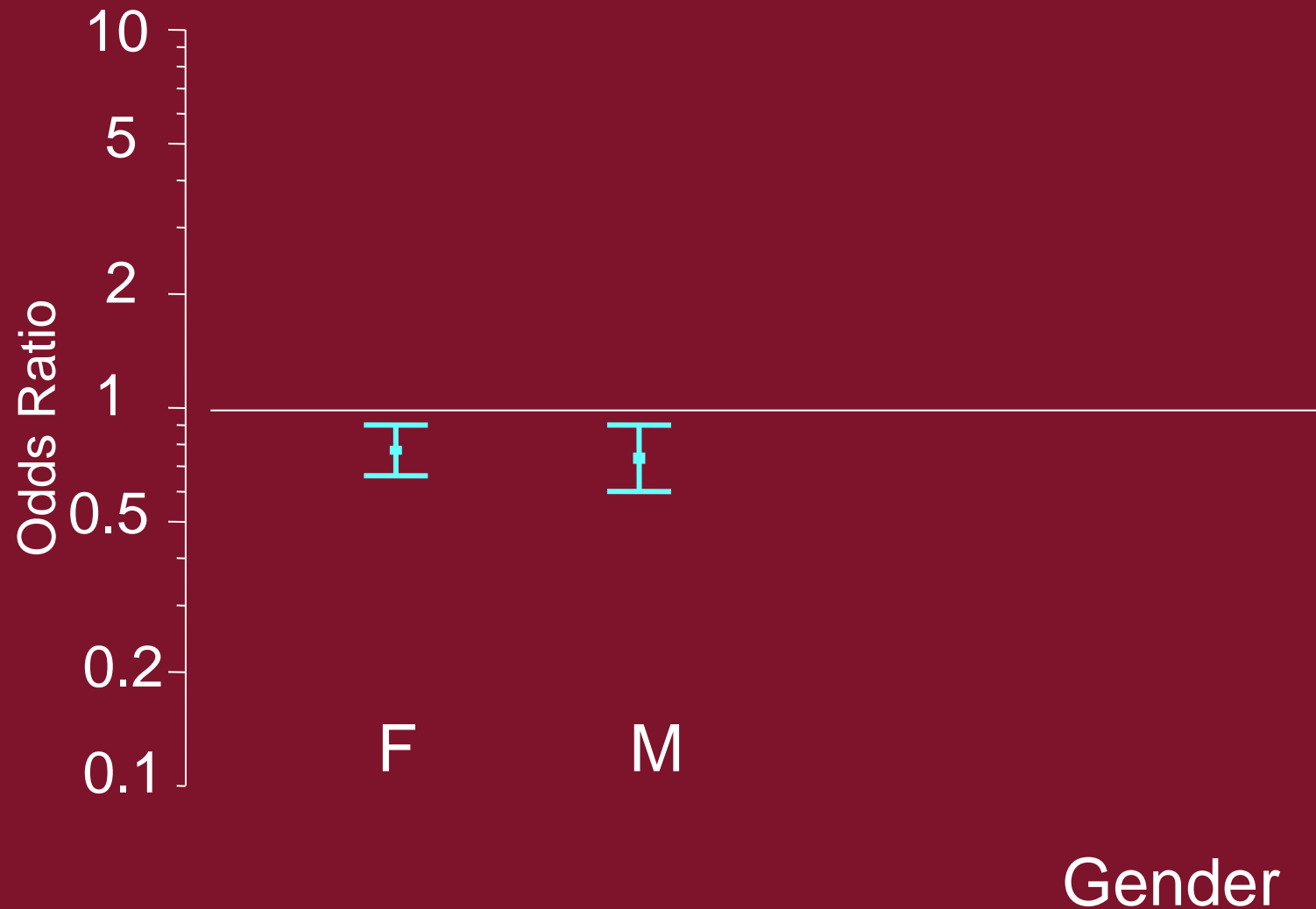- USA   15% - 50%

Reason for aspirin use

- Cardiovascular prevention   89%
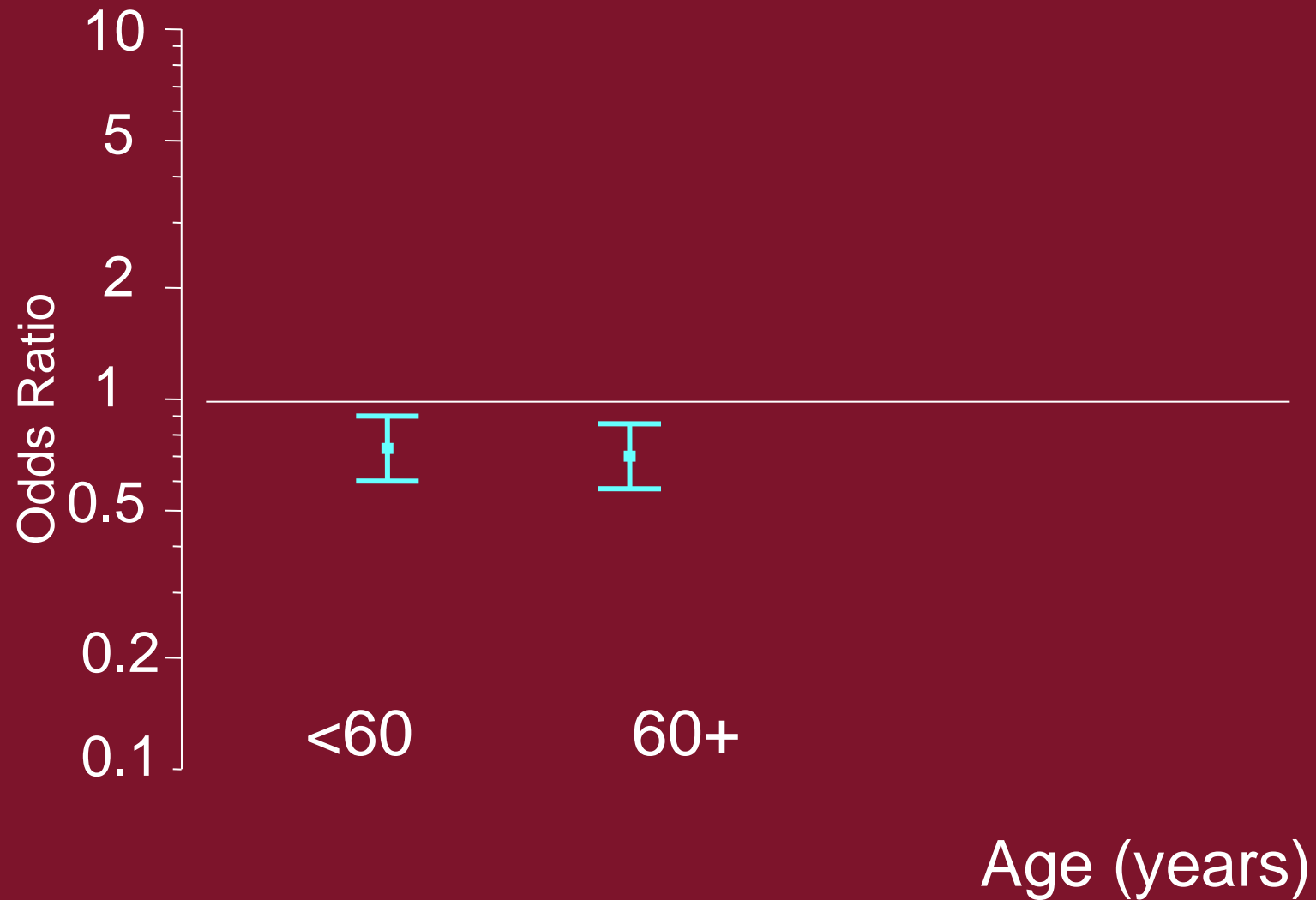- Analgesic   11%

HNC and regular aspirin use

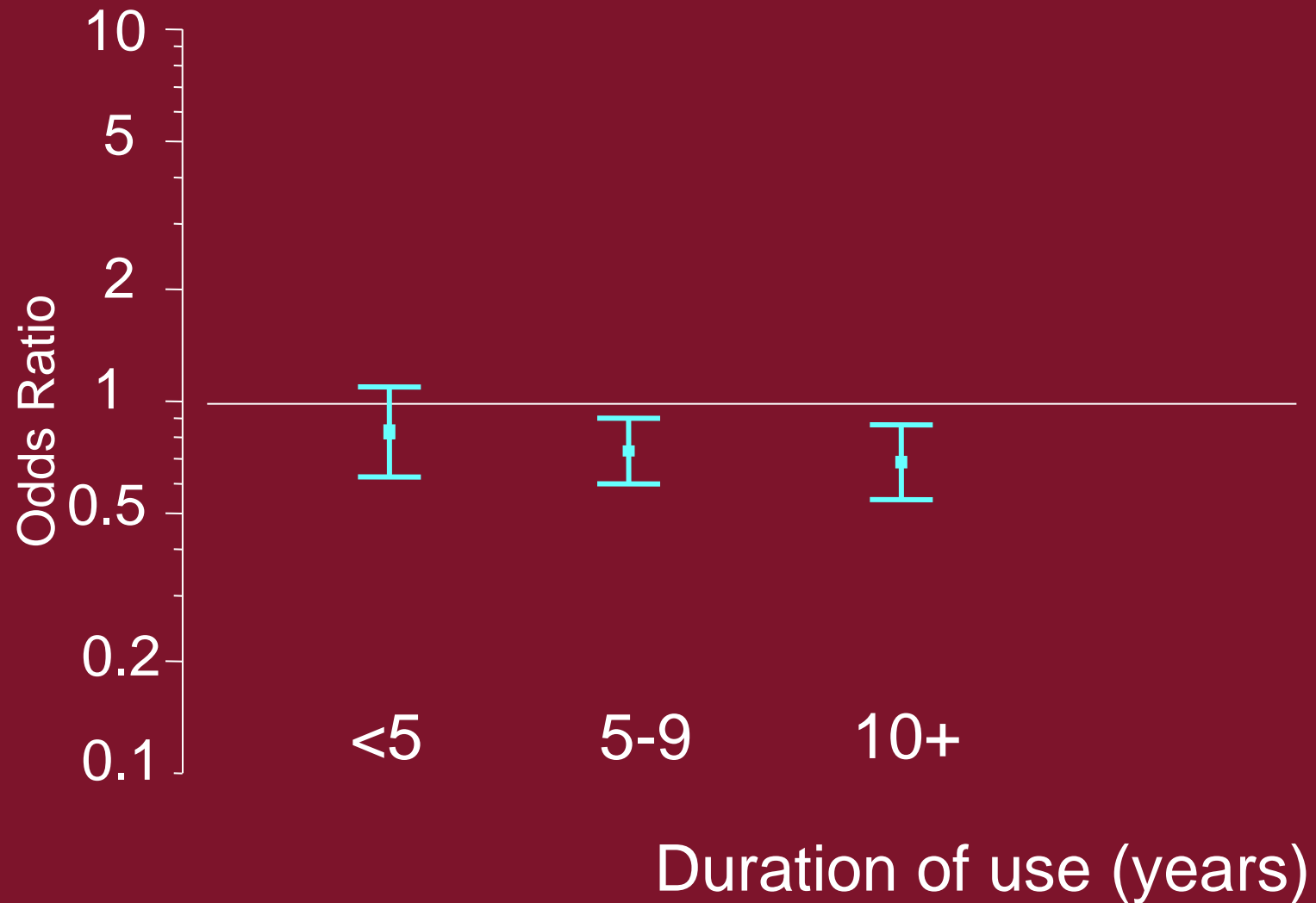| Centre	OR (95% CI)
Multicenter (Italy)	0.72 (0.40, 1.28)
Tampa (USA)	0.45 (0.25, 0.81)
West Europe	0.89 (0.73, 1.10)
Buffalo (USA)	0.84 (0.66, 1.07)
Milan (Italy)	0.78 (0.49, 1.26)
Overall	**0.80 (0.76, 0.85)**

$I^2=18\%$
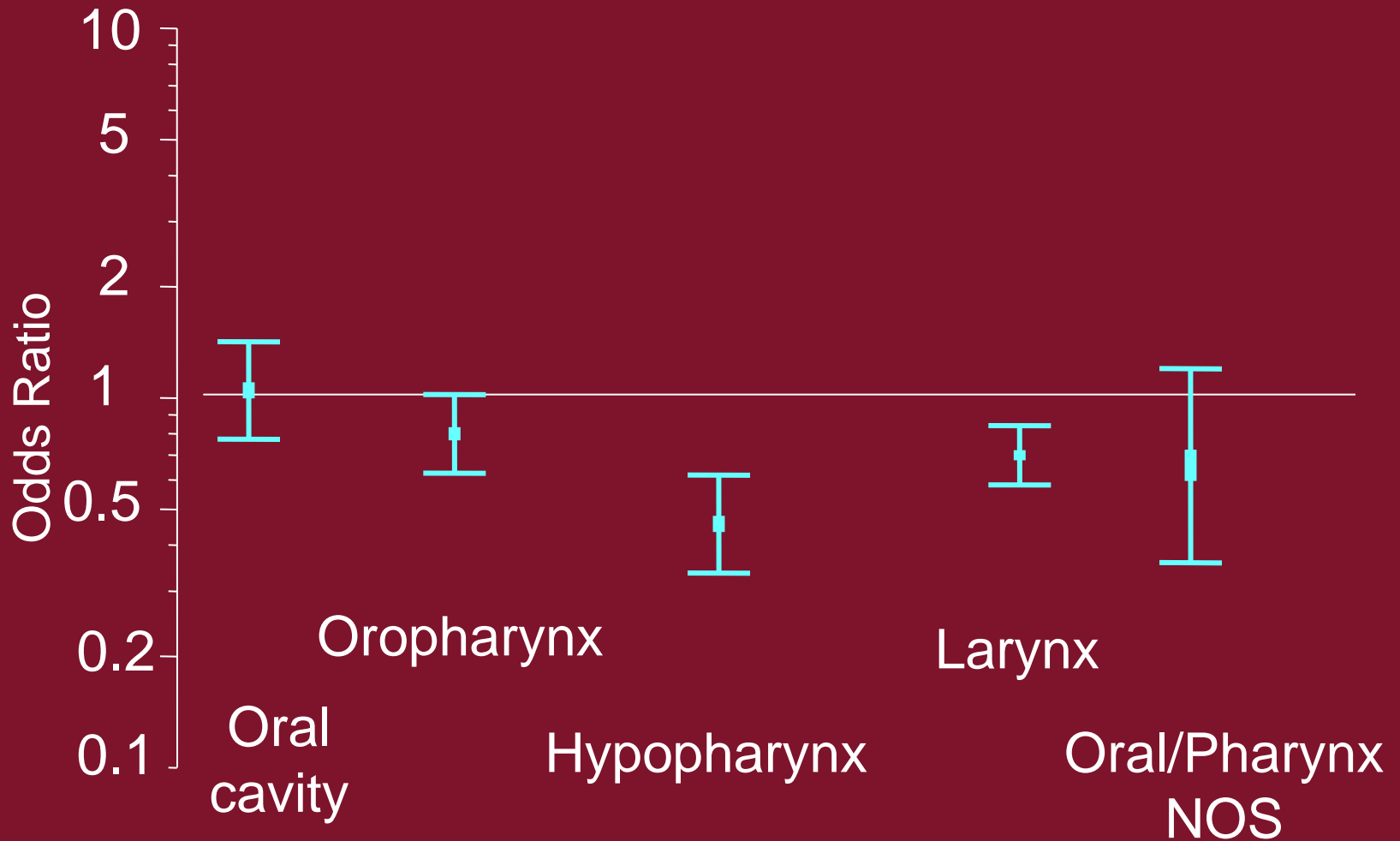
HNC and regular aspirin use by gender

HNC and regular aspirin use by age group

HNC and duration of regular aspirin use

Aspirin: cancer sub-site

Conclusion

- Aspirin use, particularly long-term, was associated with a decreased risk of HNC

Discussion (1)

- The chemopreventive effect of aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs) has been attributed to their inhibition of cyclooxygenase (COX), the enzymes responsible for the synthesis of prostaglandins.

- COX - in particular the isoform COX-2 - has been reported to be abnormally expressed in many cancer cell lines and has been implicated in the process of carcinogenesis, tumour growth, apoptosis, and angiogenesis.

Discussion (2)

- Among the weaknesses of this study are inherent limitations of observational studies, related in particular to measurement errors in the exposure to aspirin.

- Aspirin and other NSAIDs may cause gastrointestinal bleeding and heartburn.

Discussion (3)

- Analysis of benefits and harms in the general population in the developed world suggests a net benefit for a minimum 5 years of aspirin prophylaxis starting between ages 50 and 65, for both men and women, with larger benefits for 10 years of use (Cuzick et al 2014) .

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