are starting to bear fruit. Patients with high sun sensitivity manage to better protect themselves from sun exposure but, despite this, there is a strong need to reinforce sun exposure risk awareness in the general population.

**IMPACTED CERUMEN: A LITERATURE REVIEW**

**OBJECTIVES:** To examine the literature on impacted cerumen with specific reference to pharmacological ceruminolytic agents, its epidemiology and current management in primary care.

**METHODS:** A systematic literature review was undertaken by an electronic search of the Medline, Embase, Health Stat, Current Contents, NHISEED and Cochrane databases. The search terms for the database included “cerumen”, “ear wax” and “hearing loss” and included papers published between January 1, 1990 and July 31, 2002.

**RESULTS:** Impacted cerumen is commonly seen in primary care settings. Between 1.2 million and 3.5 million people in the UK suffer from impacted cerumen. Moreover, 2.3 million people in the UK suffer cerumen problems serious enough to warrant management, with approximately four million ears being syringed annually. Impacted cerumen causes unpleasant symptoms and is occasionally associated with serious sequelae, such as hearing loss, social withdrawal, poor work function and perforated eardrums. The physiology, clinical significance and management implications associated with excessive and impacted cerumen remain poorly characterised. The evidence supporting the traditional view that cerumen plays a biologically or clinically significant role in host defence is weak; rather the consensus seems to be that if anything, cerumen offers a rich medium supporting microbiological growth. **CONCLUSIONS:** Patients with impacted cerumen clearly require effective treatment. However, given a dearth of rigorous evidence in the literature any attempt at a systematic assessment of optimal management strategies is exceedingly difficult. The evidence surrounding the pharmacological management of impacted cerumen is inconsistent and few conclusions can be drawn. There is clearly a need for a definitive assessment of the most effective pharmacological strategy for cerumen removal. Lastly, the causes and management of impacted cerumen require further investigation.

**EYE/EAR/SKIN DISEASES/DISORDERS—Methods and Concepts**

**ASSOCIATION BETWEEN VITAMIN SUPPLEMENTS USAGE AND PRESENCE OF AGE-RELATED MACULAR DEGENERATION IN A LATINO POPULATION ADJUSTING FOR SELECTION BIAS USING PROPENSITY SCORES**

**OBJECTIVES:** Investigate whether methods employed to reduce omitted variable bias can be used in a cross-sectional database to identify a relationship between supplemental vitamin usage and the presence of Age-related Macular Degeneration (AMD) in a Latino population. **METHODS:** Data were obtained from the Los Angeles Latino Eye Study (LALES) and included 6104 subjects. Data were originally collected to assess the prevalence of ocular disease and diabetes. Stepwise logistic regressions and simple logistic regressions for AMD were performed. Propensity scores were then used to control for selection bias. In the first stage, the probability of receiving vitamin supplements for 10 years or more was modeled using logistic regression. Subjects were separated into quintiles defined by their propensity scores and we compared the vitamin supplement/no vitamin supplement groups using a 2-way analysis of variance model. Finally, the effect of vitamin use on AMD after selection bias adjustment was estimated using logistic regression. **RESULTS:** In total, 572 cases of AMD were identified. When using stepwise logistic regression, older subjects (OR: 1.043, CI: 1.034–1.052), males (1.624, 1.157–2.280), and people with income level less than $20,000 ($1.428, 1.006–2.028) were more likely to develop AMD. Only age and gender were significant using logistic regression and adjusting for potential confounders. The seven covariates found significantly different between the vitamin/no vitamin groups were all non significantly different after adjustment for propensity score quintiles. However, even after selection bias adjustment, vitamin usage continues to be non-significant (0.896, 0.594–1.352). **CONCLUSIONS:** Although, propensity scores helped reduce potential sources of bias in this cross-sectional database, they did not improve the ability to detect a relationship between vitamin usage and AMD. Other sources of bias, such as the inability to determine the time of development of AMD, unknown dosages and specific vitamins used, could not be addressed by the use of propensity scores.

**GASTROINTESTINAL DISEASES DISORDERS**

**ECONOMIC EVALUATION OF ON-DEMAND MAINTENANCE THERAPY WITH PROTON PUMP INHIBITORS IN PATIENTS WITH SYMPTOMATIC GASTROESOPHAGEAL REFLUX DISEASE—A MONTE-CARLO ANALYSIS FOR ITALY**

**OBJECTIVES:** On-demand proton pump inhibitor (PPI) maintenance therapy is recommended for patients with symptomatic gastroesophageal reflux disease (GERD) in Italy who achieve symptom remission after 4 weeks of continuous treatment. The objectives of this analysis are to evaluate the costs to the health care system (NHS) and to society and effectiveness (quality adjusted life years) of on-demand maintenance therapy in patients with symptomatic GERD. **METHODS:** Decision analysis and Markov modelling of costs and effectiveness up to 12 months. Efficacy data were extracted from seven placebo-controlled trials; the primary outcome measure was time to treatment discontinuation owing to relapse of symptoms, requiring continuous therapy. Health state utilities were derived from a previously published study and data on health care resource utilisation were obtained from a prospective Italian study that followed 577 patients with functional dyspepsia for one year. **RESULTS:** Differences in utility scores associated with each PPI, ranging from 0.731 to 0.745 quality-adjusted life years, were not statistically different. Annual expected cost, however, were statistically different among the different drugs and the following cost-minimization raking was obtained for costs to the NHS and to society, respectively: rabeprazole (181€, 295€), pantoprazole (223€, 341€), lansoprazole (249€, 370€), omeprazole 10 mg (297€, 412€), esomeprazole (295€, 419€), omeprazole 20mg (405€, 528€). Unit cost of PPI was the major determinant of cost to the NHS, while productivity days lost due to symptoms was the major determinant of cost to society. **CONCLUSIONS:**