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.

**PES24**

**IMPACTED CERUMEN: A LITERATURE REVIEW**

**Guest JF**, Greener MJ, Smith AF

1Catalyst Health Economics Consultants, Middlesex, UK; 2University of Oxford, Oxford, UK

**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 Star, Current Contents, NHS EED 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 sequeae, 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 any-thing, 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**

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

**PES25**

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

**Bonnet PO**, Globe D, Varma R, Johnson KA

1University of Southern California, School of Pharmacy, Los Angeles, CA, USA; 2University of Southern California, Keck School of Medicine, Los Angeles, CA, USA

**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**

**GASTROINTESTINAL DISEASES DISORDERS—Cost Studies**

**PGII**

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

**Hughes DA**, Marchetti M, Colombo GL

1University of Liverpool, Liverpool, Merseyside, UK; 2IRCCS Policlinico San Matteo, Pavia, Italy; 3S.A.V.E Studi Analisi Valutazioni Economiche, Milano, 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 10mg (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:**
On-demand use of rabeprazole for the management of symptomatic GERD incurs the least cost in comparison to the other PPIs evaluated. Utility gains were comparable for all on-demand PPIs.

**PG12**

THE ECONOMIC EVALUATION OF A RANDOMIZED TRIAL COMPARING “TEST-AND-TREAT” WITH PROMPT ENDOSCOPY IN PRIMARY CARE; THE HEALTH ECONOMICS OF THE SENSE-STUDY

Klok R1, Arents NL2, De Vries R1, Thijs JG3, Brouwers JR1, Kleibeuker JH2, Postma MJ1

1University of Groningen, Groningen, Groningen, Netherlands; 2University Hospital Groningen, Groningen, Groningen, Netherlands; 3Bethesda Hospital, Hoogeveen, Drenthe, Netherlands

OBJECTIVES: To assess the cost-effectiveness of two initial management strategies for the general practitioner in dyspepsia. The two strategies investigated are prompt endoscopy and a Helicobacter pylori test-and-treat strategy. METHODS: Pharmacoeconomic data was gathered alongside the SENSE (Strategy: Endoscopy versus Serology)-study from 1998 up to 2001. Patients were randomized in the endoscopy (n = 105) and test-and-treat (n = 118) group. The costs were standardized costs for 1999. Quality of life was measured at inclusion and one year later, using the validated Dutch translation of the RAND-36 questionnaire. The results obtained were transformed into one overall score, in terms of Quality Adjusted Life Years (QALYs). An incremental cost-effectiveness ratio (ICER) was calculated as incremental cost of test-and-treat over early endoscopy per QALY gained. For estimating the uncertainty we calculated 95% uncertainty limits using parametric bootstrap with angular transformation. RESULTS: For the test-and-treat group the total costs per patient were 311.02€ and the number of QALYs gained was 0.074 per patient. For the endoscopy group this was 748.08€ and 0.064 QALYs gained. The point estimate of the ICER indicated cost-savings and QALYs gained. Parametric bootstrap uncertainty limits indicate cost-savings per QALY gained (75.7%) and cost savings per QALY lost ranging from 11,970€ to infinity. CONCLUSIONS: According to our data, the Helicobacter pylori test-and-treat strategy is more cost-effective than prompt endoscopy in the initial management of dyspepsia in general practice.

**PG13**

COST-EFFECTIVENESS OF ESOMEPRAZOLE COMPARED TO PANTOPRAZOLE AND GENERIC OMEPRAZOLE IN ENDOSCOPIE POSITIVE GERD PATIENTS IN GERMANY

Gross M1, Braun S1, Reitberger U2, Spannheimer A2

1Internistische Klinik Dr. Mueller, Munich, Germany; 2Kendle International Inc, Munich, Germany

OBJECTIVES: To compare the cost-effectiveness of esomeprazole versus pantoprazole and generic omeprazole from the perspective of the statutory health insurance using a decision model reflecting naturalistic treatment behaviour in GERD patients in Germany. METHODS: The model applies to patients with endoscopically verified GERD receiving PPI therapy and covers a period of 8 weeks. Therapies included were esomeprazole 20 and 40mg, omeprazole 20 and 40mg and pantoprazole 40mg. Real-life treatment patterns and resource utilization for acute and maintenance treatment were derived from 30 physician interviews, whereas healing rates after 4 and 8 weeks of treatment were derived from published literature. Resource utilization included visits, examinations and laboratory tests at primary care physicians and specialists, drug treatment of GERD, hospitalizations and working incapacity. RESULTS: Total costs per patient ranged between 137€ for esomeprazole and 202€ for pantoprazole with total healing rates after eight weeks between 85% (omeprazole) and 96% (esomeprazole). No hospitalizations were observed and the few sick leaves reported were shorter than 42 days, inducing no costs from the insurance perspective. Costs per patient healed varied between 145€ (esomeprazole) and 218€ (pantoprazole), with most of the treatments ranging closely around 200€. Due to the relatively small sample size, we tested the robustness of the results by conducting sensitivity analyses representing different degrees of standardization in input parameters. Cost-effectiveness did not differ much in either scenario; standardizing e.g. physician costs and treatment duration resulted in costs per patient healed between 163€ (esomeprazole) and 210€ (omeprazole). CONCLUSIONS: The results indicate that esomeprazole is a cost-effective treatment option for patients with endoscopically verified GERD treated over 8 weeks. Strongest competitor for esomeprazole is treatment with generic omeprazole. The current model will be extended to a 6 month period as soon as the data from a currently completed study will become available.

**PG14**

USE OF CAPSULE ENDOSCOPY IN DIAGNOSING OBSCURE GASTROINTESTINAL BLEEDING: COST-EFFECTIVENESS EVALUATION FROM A EUROPEAN PERSPECTIVE

Mueller E, Schwander B, Bergemann R

Analytica International, Loerrach, Germany

OBJECTIVES: To analyze the cost-effectiveness of capsule endoscopy (CE) in diagnosing obscure gastrointestinal bleeding (OGB) from a health care payer perspective in France, the UK, and Switzerland. METHODS: Based on clinical trial data, a microsimulation model incorporating first- and second-order Monte Carlo simulation was developed. The model calculates the costs per correctly diagnosed case in patients with OGB. Sensitivity and specificity for CE and the comparator push enteroscopy (PE) as well as kind and number of other procedures performed prior to diagnosis were evaluated from 7 controlled clinical trials (n = 184). Procedure cost, cost of diagnostic failure (false positive/negative diagnosis) were considered and incremental cost-effectiveness ratios dependent on disease prevalence are given. Cost data were estimated from a healthcare payer perspective using the “Assurance Maladie” (France), NHS Reference Cost (UK), and the TARMED (Switzerland). RESULTS: Sensitivity for CE was 89–99% and 27–60% for PE. Specificity values were 90–99% for CE and 50–70% for PE. In all 5 countries, CE was cost saving when the prevalence of the disease was 10% or higher. Most common use for CE was at a prevalence of 50%. Costs savings at a prevalence of 50% are 1508€ (France), 1695€ (UK) and 2240€ (Switzerland). Probabilistic sensitivity analyses approved a high robustness for these results. CONCLUSIONS: CE proved to have a higher effectiveness than PE when diagnosing obscure bleeding. Though procedure costs vary substantially from country to country, incremental analysis shows that the use of CE has a cost-saving potential in all three countries.

**PG15**

COSTS BENEFITS WITH ESOMEPRAZOLE 20MG “ON-DEMAND” TREATMENT IN GASTROESOPHAGEAL REFLUX DISEASE (GERD) PATIENTS IN BELGIUM

Louis E1, Urbain D2, Deltenre M3, Vandenhoven G4, Duquenne V5, Schockaert B6

1Ulg, Liège, Belgium; 2AZ VUB, Brussels; 3ULB, Bruxelles, Belgium; 4NV AstraZeneca SA, Brussels, Belgium

OBJECTIVES: Assessing the potential increase in GERD medical treatment expenses and the impact of on-demand treatment with