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COST-EFFECTIVENESS ANALYSIS OF INTRAVITREAL AFLIBERCEPT IN THE TREATMENT OF NEOVASCULAR AGE-RELATED MACULAR DEGENERATION IN GREECE

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OBJECTIVES: To evaluate the cost-effectiveness of intravitreal aflibercept (IVT-AFL) versus intravitreal ranibizumab for the management of neovascular age-related macular degeneration (nAMD) in Greece. **METHODS:** A Markov "better-eye-treated" model consisting of 6 health states (5 states related to vision impairment, and death) was adapted in the Greek healthcare setting to compare monthly (2q4) and bimonthly (2q8; following 3 monthly loading doses) treatment with 2 mg IVT-AFL with 0.5 mg ranibizumab either on a monthly basis (0.5q4) or as needed (PRN). The time horizon of analysis was 20 years. All patients were assumed to discontinue treatment at the end of the second year. Clinical inputs and utility values were extracted from the literature. The analysis was conducted from a payer perspective and, as such, only costs reimbursed by the payer were considered (in 2014 euros). Costs and outcomes were discounted by 3.5% per year. The primary outcomes were costs, quality-adjusted life years (QALYs), and the incremental cost-effectiveness ratio per QALY gained. Probabilistic sensitivity analysis (PSA) was conducted. **RESULTS:** IVT-AFL 2q8 was the least expensive regimen (€21,930) while ranibizumab 0.5q4 was the most expensive (€26,203). For all regimens, the total cost was driven mainly by the direct nonmedical costs, followed by drug acquisition costs. In terms of QALYs, IVT-AFL 2q4 was the most efficacious (4.057), while IVT-AFL 2q8 was more efficacious (4.049) than ranibizumab PRN (4.025) but less efficacious than ranibizumab 0.5q4 (4.052). Although IVT-AFL 2q4 was more efficacious than IVT-AFL 2q8, the former cost approximately €350,000 per QALY gained compared with the latter. Both ranibizumab regimens were deemed inferior. PSA revealed that at all willingness-to-pay thresholds up to €335,000, IVT-AFL 2q8 had the highest probability of being cost-effective compared with the other treatment strategies. **CONCLUSIONS:** Bi-monthly treatment with IVT-AFL may be the most cost-effective option for the treatment of nAMD in Greece.

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COST-EFFECTIVENESS ANALYSIS OF CONBERCEPT VERSUS RANIBIZUMAB FOR THE TREATMENT OF AGE-RELATED MACULAR DEGENERATION IN CHINA

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OBJECTIVES: The objective of this analysis is to evaluate the cost-effectiveness of Conbercept versus Ranibizumab in treating neovascular age-related macular degeneration (AMD), the third leading cause of irreversible blindness worldwide, from China perspective. **METHODS:** A Markov model, based on best corrected visual acuity (BCVA) letters, was developed to simulate the progression of neovascular AMD among Chinese and to predict the outcomes of Conbercept and Ranibizumab treatment over 1 year. The initial distribution of visual acuity was estimated from MARINA trial. Disease progression was characterized by a series of annual transitions between 5 health states referred to as 90, 75, 60, 45, 30 BCVA letters. A patient's visual acuity was assumed to either increase by 15 letters, remain the same, decrease by 15 letters or decrease by 30 letters each year. The transition probabilities of Ranibizumab were estimated based on the reported data of EXTEND II trial. The transition probabilities of Conbercept were extracted from AURORA trial. Utility values were taken from a cross-sectional study. Cost data, including drug cost, administering cost and caregivers cost in different health states, were derived from literatures and direct physician survey. One-way sensitivity analysis was conducted on selected key parameters. **RESULTS:** One-year total cost was 79,189.94 and 141,291.23 RMB for Conbercept and Ranibizumab respectively; QALY of Conbercept and Ranibizumab was 0.725 and 0.715 respectively. The result suggests a dominant ICER of -6,210,129 RMB/QALY, which indicates that Conbercept, when compared with Ranibizumab in Chinese AMD population, has demonstrated better efficacy and overall lower costs. The one-way sensitivity analysis of key parameters (unit price and annual injection times) didn't change the conclusion, indicating the robustness of the results. **CONCLUSIONS:** Compared with Ranibizumab, Conbercept is a cost-effective alternative for the treatment of age-related macular degeneration in Chinese people. Conbercept provides better efficacy with overall lower cost.

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BUDGET IMPACT ANALYSIS OF APREMILAST ON MODERATE TO SEVERE PSORIASIS IN SPAIN

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OBJECTIVES: This analysis was designed to estimate the budget impact following the introduction of apremilast in the treatment of adult patients with moderate to severe psoriasis who have failed to respond to, have a contraindication to, or are intolerant of other systemic therapy in Spain. **METHODS:** A budget impact model was developed to estimate healthcare costs for adults with moderate to severe psoriasis over 3 years from the NHS perspective. Target population was defined based on epidemiological criteria; psoriasis prevalence (2.30%) and proportion of patients on biologic treatment (18%) were applied to national adult population statistics. Addition of apremilast to the therapeutic arsenal (adalimumab, etanercept,

infliximab, ustekinumab) was explored. From the annual eligible psoriasis population (N=16,322), 5% (n=816), 11% (n=1,795), and 18% (n=2,938) were assumed to be treated with apremilast for the first, second, and third years. A local expert panel provided detailed resource consumption information. Total cost included drug acquisition based on drug doses from summaries of product characteristics (ex-factory price with mandatory deduction), administration (parenteral drugs), and monitoring costs. Unitary costs (€, 2014) were obtained from national databases. **RESULTS:** Total budget for the scenario without apremilast was €193,677,634, €192,945,426, and €192,077,291 in the first, second, and third years. Pharmaceutical cost represented 95% of the total. Following apremilast introduction, total budgets were reduced by €2,194,450, €4,827,791, and €7,900,021 in the first, second, and third years. Incremental drug costs/patient comparing the scenario with apremilast vs. without apremilast were €-134.44 (-1.13%), €-295.78 (-2.50%), and €-484.00 (-4.11%) in the first, second, and third years. **CONCLUSIONS:** Apremilast treatment for psoriasis patients who have failed to respond to, have a contraindication to, or are intolerant of other systemic therapy would imply a budget impact decrease on overall healthcare expenditure for NHS. This analysis was limited in that the model did not consider cost-effectiveness issues.

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BUDGET IMPACT ANALYSIS OF APREMILAST IN PATIENTS WITH PSORIASIS IN THE ITALIAN SETTING

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OBJECTIVES: This analysis was designed to estimate the budget impact following the introduction of apremilast in the treatment of moderate to severe chronic plaque psoriasis for adult patients who have failed to respond to, have a contraindication to, or are intolerant to other systemic therapy in Italy. **METHODS:** A budget impact model was adapted to the Italian setting using local epidemiological and cost data to assess the financial impact of the introduction of apremilast to the market for the Italian National Health Service (NHS). The analysis was conducted over a 3-year time horizon considering year 2016 as baseline. We used real data of market consumption (IMS 2014 data), reflecting the budget holder's perspective and a real-world 2015 study concerning the healthcare resource consumption related to each treatment included in the analysis (apremilast, etanercept, infliximab, adalimumab, or ustekinumab). Market penetration of apremilast was based on manufacturer's assumptions. Unit costs were taken from Italian standard sources. Frequency of screening and monitoring tests was obtained from real-world data (database analysis). **RESULTS:** A total of ~11,500 patients were considered as the model population at the first year, with an assumed 5%-7% annual growth rate. The introduction of apremilast over the next 3 years, assuming a market share of 1%-5%, 10%-15%, and 15%-20%, for the first, second, and third year, respectively, would lead to cost savings varying from a minimum of €10,150,000 to a maximum of €15,480,000 for the 3 years. In particular, drug savings account for 91% each year, whereas monitoring savings account for 3% and administration savings account for 6%. **CONCLUSIONS:** This analysis suggests that the use of apremilast for the treatment of moderate to severe psoriasis may represent a cost-saving option for the Italian NHS over the first 3 years of utilisation.

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COST-EFFECTIVENESS OF IKERVIS® IN SEVERE DRY EYE DISEASE IN THE UK [UPDATE]

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OBJECTIVES: Routine clinical practice in UK patients with severe dry eye disease is a combination of artificial tears (AT) and ocular lubricant ointments. This study aims to assess the cost-effectiveness to the UK NHS of the addition of Ikervis® (Ciclosporin A; CsA) to routine practice for patients who have not adequately responded to therapy. **METHODS:** Using a Markov framework, future health effects and costs were modeled. Eligible patients receive six months therapy with Ikervis® plus AT and ocular lubricants or AT and ocular lubricants without CsA. Upon completion, those who respond sufficiently remain on CsA treatment for the duration of the response, achieving a higher quality of life (HRQoL) and lower AT use. Incremental cost effectiveness ratios (ICER) were expressed in GBP (£) per QALY gained with costs and health effects discounted at 3.5% over a lifetime time horizon. Deterministic and probabilistic sensitivity analyses were employed to assess the effect of uncertainty on the model. Scenario analyses including less stringent improvement criteria, alternative approaches to deriving response stratified utility values and a shorter initial trial period were performed. **RESULTS:** Compared with AT alone, Ikervis® Results in a lifetime cost to the UK NHS of £934 per patient, but offers an additional 0.03 QALYs. The ICER is £35,805/QALY gained. At a commonly accepted cost-effectiveness threshold of £30,000 per QALY, Ikervis® is cost-effective in 32.4% of simulations. Tornado analysis showed the model is most sensitive to the incremental benefit on patient's long-term HRQoL associated with responding to therapy compared with non-response. **CONCLUSIONS:** The modelling study showed that from an NHS perspective, health gains can be achieved at a low cost. The Ikervis® ICERs are well below the NICE's commonly accepted cost-effectiveness threshold of £30,000/QALY gained, indicating that Ikervis® in the target patient population could represent a cost-effective intervention in the UK.

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DRUG UTILISATION AND HEALTHCARE RESOURCES USE IN PATIENTS WITH PSORIATIC ARTHRITIS AND PSORIASIS

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OBJECTIVES: This study aimed to assess therapeutic strategies in clinical practice for patients with psoriatic arthritis (PsA) or psoriasis and calculate related healthcare resources consumption. **METHODS:** An observational retrospective cohort analy-

sis was conducted based on administrative databases from 2 Italian local health units (LHUs), ≈1.6 million beneficiaries. Citizens who were diagnosed with PsA or psoriasis and had a biologic prescription from January 1, 2010, to December 31, 2013 (index date) were included. Patients were classified as biologic-naïve or biologic-established according to previous biologic treatment, and analysed 1 year back to assess resource consumption in the 2 groups. **RESULTS:** According to findings from the 2 LHUs, 86% of biologic-naïve patients had previous disease-modifying anti-rheumatic drug (DMARD) prescriptions and 47% had previous topical anti-psoriatic prescriptions. Exposure to DMARDs and anti-psoriatic drugs was lower in biologic-established patients (43% and 33%, respectively). Yearly incidence of disease-related hospitalisations before the index date was 7% in biologic-naïve and 13% in biologic-established patients. Biologic-naïve patients had longer average hospital lengths of stay. The average cost of illness in the 12 months before the first biologic prescription (biologic-naïve) was ≈760€, with 530€ for DMARDs, 130€ for anti-psoriatics, and 101€ for inpatient stays. Non-PsA/psoriasis-related costs were 790€, of which 57% were due to hospitalisations. Biologic-established patients' yearly expenditure accounted for 10,410€ for biologic treatment, 265€ for other PsA/psoriasis drugs (168€ DMARDs, 70€ anti-psoriatics, 26€ corticosteroids), and 410€ for hospitalisations. Non-disease-related expenditure was 630€, with >80% due to drug consumption. **CONCLUSIONS:** At the index date, consumption of DMARDs and other anti-psoriatics was lower in biologic-established than biologic-naïve patients (43% vs 86% and 33% vs 47%, respectively), but overall drug expenditure was higher due to biologic acquisition cost (10,410€ vs 760€). Disease-related hospitalisations were higher in biologic-established patients treated the year before the index date (13% vs 7% of biologic-naïve patients).

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SUGAR FREE GUM: IMPACT ON ORAL HEALTH AND COPAYMENT IN GERMANY

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OBJECTIVES: Caries is the most common dental disease in industrial countries. Health expenditures for the treatment of caries were estimated 8.2 billion € in 2012 in Germany. In order to prevent or at least delay progression, many prevention measures have been implemented at different levels. Consumption of sugar free gum (SFG) is one preventive measure at the individual level. The benefit of SFG in caries prevention is proven by numerous studies. The presented study evaluates the cost-effectiveness of SFG from the perspective of the patient based on copayment in Germany. **METHODS:** The development of the current status in dental health care is projected on a time horizon of 62 years. This is compared to a scenario where the consumption of SFG is increased to the Finnish level of consumption. Every tooth can range between the stages "No caries", "1-4 area filling", "Partial crown", "Crown" and "Bridge / Prosthesis / Implant". Transition probabilities were calculated based on the epidemiological data in the DMS IV. The calculation was conducted from the patients' point of view including costs for copayment. **RESULTS:** An increase in SFG consumption to a Finnish level leads to lifetime costs for caries of 16.882,73 € per patient for copayment. If the SFG consumption stays at its current level, the costs per patient are 23.801,11 €. As a result, in Germany an increase in SFG consumption leads to cost savings of about 7,000 € per patient within 62 years, or annual savings of 111 €. **CONCLUSIONS:** Increasing the consumption of SFG leads to both improvement of oral health and cost savings for the patient.

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COST-EFFECTIVENESS ANALYSIS OF TOPICAL FILED TREATMENT THERAPIES

FOR THE TREATMENT OF ACTINIC KERATOSIS IN GREECE

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OBJECTIVES: Actinic keratosis (AK) caused by chronic exposure to ultraviolet radiation, is the most common premalignant dermatological disease in adults over 60. Topical field treatments are effective in clinical and subclinical lesions. There are currently three topical treatment options available in Greece: diclofenac gel (3%), imiquimod (5%) and a recently launched agent: Ingenol mebutate gel (IM). The objective of the present study was to perform a cost-effectiveness analysis of IM vs other topical alternatives for the treatment of AK from a Greek healthcare perspective. **METHODS:** The analysis was conducted via a decision tree in order to calculate the clinical effects and associated costs of AK first-line treatments: IM (2-3 days), diclofenac (3% for 8 or 12 weeks) and imiquimod (5% for 4 or 8 weeks), over a 24-month horizon, divided in 6-month cycles, by considering a hypothetical cohort of immunocompetent adult patients with clinically confirmed AK on the face/scalp or trunk/extremities. Clinical data on the relative efficacy of the different strategies under consideration were obtained from a network meta-analysis, while inputs concerning resource use, reflecting the clinical practice derived from an expert panel. All costs were calculated from a Greek third-party payer perspective. **RESULTS:** IM 0.015% and 0.05% were both cost-effective compared to diclofenac and below a willingness-to-pay threshold of 30,000€/QALY (7.857, and 4.451 €/QALY gained for IM 0.015% compared to diclofenac 2x daily for 8 and 12 weeks respectively). Comparing IM on face/scalp AK lesions for 3 days versus imiquimod (4 or 8 weeks) resulted in equivalent Results (22.964€ and 787€/QALY gained) while IM use on trunk/extremities was dominant compared to imiquimod four weeks treatment. **CONCLUSIONS:** From a social insurance perspective in Greece, IM 0.015% and IM 0.05% could be the most cost-effective first-line topical filed treatment options in all cases for the treatment of Actinic Keratosis.

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COST-EFFECTIVENESS OF RANIBIZUMAB VS. DEXAMETHASONE IMPLANT IN DIABETIC MACULAR EDEMA

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OBJECTIVES: Ranibizumab and dexamethasone intravitreal (DEX) implant are authorised treatments for treatment of DME in Turkey. The objective of this study is to assess the cost-effectiveness of ranibizumab vs. dexamethasone implants in DME treatment with public payer's perspective. **METHODS:** Two studies are used for indirect comparison to calculate the relative efficacy of ranibizumab vs. DEX implant over 12 months with endpoints of BVCA gains: (i) RESTORE comparing ranibizumab vs. laser BVCA gains at month 12 (ii) MEAD comparing DEX implant vs sham injections BVCA gains at month 36. For months 12 to 36, the efficacy inputs are calibrated such that the trajectories of mean BCVA for the two comparators reflect those reported in RESTORE(extension) and MEAD respectively. Conservative transitions probabilities were imposed on the ranibizumab arm, such that mean BCVA sustains the -8 letters gain but no further gain is assumed. These efficacy inputs are then validated by the MAGGIORE head to head study of ranibizumab and DEX implant. MAGGIORE couldn't be used as a primary source of efficacy as the %gains of 10(or 15 letters) were not reported. Units of resource use and withdrawal rates are obtained from RESTORE and MEAD. Mean number of yearly injection frequency for ranibizumab was 7.0, 3.9, 2.9 for year 1, year 2 and year 3 respectively; while for DEX implant yearly injection frequency was 2.4 for all three years. Unit costs of resources were obtained by using national fees per service lists and discounted by 3.5%. **RESULTS:** Mean BCVA change from baseline at year 3 with ranibizumab arm was 7.2 and with DEX implant arm was 2.5 points. Incremental cost of gaining an extra year without visual impairment by treating with ranibizumab rather than DEX implant is 11.339TL. **CONCLUSIONS:** Although conservative approach was pursued both in terms of efficacy for ranibizumab arm, incremental cost of gaining an extra year without visual impairment by treating with ranibizumab was negligible.

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COST-EFFECTIVENESS OF SECUKINUMAB COMPARED TO USTEKINUMAB IN PATIENTS WITH PSORIASIS FROM A SWEDISH HEALTH CARE PERSPECTIVE

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OBJECTIVES: To estimate the cost-effectiveness of secukinumab (Cosentyx®) compared with ustekinumab (Stelara®) in patients with moderate to severe plaque psoriasis from a Swedish societal perspective. **METHODS:** A cost-minimization analysis was conducted to estimate the total treatment costs (including drug acquisition, monitoring and indirect costs) of secukinumab versus ustekinumab over periods up to ten years. Indirect costs were measured by estimated work productivity loss in three improvement categories incl. PASI <50, PASI 50-74, PASI >75. Data on PASI responses were based on head-to-head trial (CLEAR). Primary outcomes were total treatment costs over a time horizon of 1-10 years, and total costs per patient achieving PASI75 and PASI90 (achieving clear or almost skin). Sensitivity analysis was performed to test the robustness of the model. **RESULTS:** Secukinumab had higher treatment initiation costs, but lower maintenance costs than ustekinumab. From year 2 onwards, secukinumab was cost-saving compared to ustekinumab. Total treatment costs after 2 years were 338'022SEK and 339'550SEK for secukinumab and ustekinumab respectively, resulting in savings of 1'529SEK. Extending the time period to 10 years resulted in savings of 50'460SEK. Based on the CLEAR study, a significantly higher proportion of patients reached PASI75 and PASI90 with secukinumab vs ustekinumab (93% and 83% PASI75; 79% v 58% PASI90). Considering a 2-year time horizon, the average total cost per patient reaching PASI75 was 363'020SEK for secukinumab compared to 410'647SEK for ustekinumab. Corresponding numbers for PASI90 were 427'648SEK and 589'375SEK. Univariate sensitivity analyses showed that base-case Results were robust. **CONCLUSIONS:** From a Swedish societal perspective, secukinumab was estimated to be cost-saving compared with ustekinumab. In addition to the lower total costs from year two onwards secukinumab has shown superior efficacy on PASI improvement and quality of life for patients, and can therefore be considered as the dominant treatment compared to ustekinumab.

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ADAPALENE 0.1% / BENZOYL PEROXIDE 2.5% + DOXYCYCLINE 200MG IS A LESS EXPENSIVE ALTERNATIVE COMPARED TO ORAL ISOTRETINOIN FOR THE MANAGEMENT OF SEVERE NODULAR ACNE IN SWEDEN

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OBJECTIVES: Oral Isotretinoin (OI) is the gold standard for treating severe nodular acne but is associated with a significant adverse events burden. In the 20-week POWER trial, Adapalene 0.1% / Benzoyl Peroxide 2.5% (A/BPO), a topical fixed-dose combination treatment, plus oral antibiotic doxycycline 200mg/day (D+A/BPO) demonstrated a favourable composite efficacy/safety profile compared to OI in severe nodular acne patients. The objective of the present study was to assess the one-year cost-effectiveness of D+A/BPO versus OI. **METHODS:** A Markov model was developed for the Swedish setting based on clinical effectiveness data from the POWER trial and the typical treatment pathway patients experience following treatment failure, discontinuation or relapse. Patients' acne was classified as "controlled" following at least 2-grade improvement in the Investigator's Global Assessment. Health state utility values (HSUV) for controlled and uncontrolled acne were estimated by applying the Swedish tariff to the EuroQOL five dimensions questionnaire responses collected at baseline and study end, although the difference in the two HSUVs was minimal. Adverse events observed in the POWER study were included, with impact on costs and quality of life. **RESULTS:** D+A/BPO treatment was less costly than OI at 17,033 SEK versus 21,185 SEK per patient. Costs Results favoured D+A/BPO due to the lack of costs associated with monitoring when receiving OI as well as lower adverse events treatment costs, combined with lower frequency and cost of physician visits as patients treated with D+A/BPO consult a general practitioner rather than a dermatologist. The total number of Quality-Adjusted Life Years accrued over one year was comparable at 0.9250 for D+A/BPO and 0.9318 for OI. Sensitivity analyses showed that D+A/BPO was no longer less costly when increasing the associated frequency of physician visits or decreasing visits with OI. **CONCLUSIONS:** For severe nodular acne patients, D+A/BPO may be considered an attractive, lower-cost, first-line alternative to OI.