OBJECTIVES: As childhood obesity increases, there is growing interest in the impact of Body Mass Index (BMI) upon bone health. This study investigated if there is an association between childhood BMI and fracture risk. **METHODS:** A prospective cohort of children with a valid primary care BMI measurement in Catalonia at age 4 years (±6 months) between 1/1/2001 and 31/12/2013 were identified in SIDIAP database, and followed up until they turned 15, migrated, died, or 31/12/2016. Fractures were defined using validated ICD10 codes recorded in primary care. Childhood cumulative incidence (CI) (age 4 to 15 years) was calculated by anatomical location and stratified by BMI category (WHO 2007 growth reference). Cox models were used to estimate Hazard Ratios (HR) according to BMI. **RESULTS:** Of 466,997 children, 9250 (2.0%) were obese, 26526 (5.7%) overweight, and 540 (0.1%) underweight. We identified 20878 incident fractures. The CI of upper limb fracture for children with obesity was 76.1 per 10,000 (95%CI 58.4-81.1), compared to 62.1 (59.8-63.4) for normal weight. Lower limb fracture CI was 28.7 per 10,000 (18.0-34.1) in obesity and 15.1 (13.9-15.7) in normal weight. Using BMI as a continuous variable, adjusted hazard ratios (HR; (95%CI)) were 1.05 (1.03-1.06) per 1 standard deviation increase for forearm fractures, 1.08 (1.05-1.12) for hand fractures, 1.14 (1.09-1.20) for ankle fractures and 1.15 (1.10-1.19) for foot fractures. Divided by WHO categories, children with obesity had an adjusted HR (95%CI) of 1.14 (1.0-1.29) for forearm fractures, 1.37 (1.14-1.66) for hand fractures, 1.66 (1.32-2.10) for foot fractures and 1.81 (1.37-2.37) for ankle fractures. Further adjustment for birthweight (available for 310,751 children) did not affect these estimates. **CONCLUSIONS:** Childhood obesity is associated with a significantly increased risk of forearm, hand, ankle, and foot fractures. The effect of increased BMI upon fracture risk in adults appears to extend to the paediatric population.

PMS15

CHILDHOOD OBESITY IS ASSOCIATED WITH BACK PAIN: A COHORT STUDY OF 466,997 INDIVIDUALS

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OBJECTIVES: Back pain is the leading cause of disability worldwide and prevalence continues to increase in children and adults. Back pain during childhood has been shown to predict adult back pain. An improved understanding of risk factors may identify children at greatest risk of developing back pain and facilitate the development of preventative strategies. **METHODS:** A dynamic cohort of children seen at age 4 years (±6 months) at paediatric screening clinics between 01/01/2001 and 31/12/2013 were identified in primary care records (SIDIAP) data, and followed up until they turned 15, migrated, died, or end of 2016. Study outcomes were recorded diagnoses of spine pain by a community paediatrician using ICD10 codes. Outcomes were measured from 01/01/2001 until 12/12/2016. Cumulative incidence was calculated using actuarial lifetables, and multivariable Cox models fitted to explore the association between spine pain and body mass index, categorised according to World Health Organisation 2007 growth reference groups. Models were adjusted for age, sex, socioeconomic status, and nationality. **RESULTS:** A total of 466,997 children were included in the study and followed up for a median (interquartile range) of 5.1 (5.2) years. The 11-year cumulative incidence of back pain was 3.81% (2.98 to 4.63) for underweight, 4.71% (95% CI 4.68 to 4.75) for normal weight, 5.72% (5.58 to 5.86) in overweight, and 6.52% (6.27 to 6.78) in children with obesity. Back pain risk increased with BMI, with adjusted Hazard Ratios (HR) of 1.18 (95%CI 1.09 to 1.27) and 1.34 (95%CI 1.19 to 1.51) for overweight and obese respectively. Boys were at lower risk of back pain than girls: adjusted HR 0.71 (95%CI 0.69 to 0.74). **CONCLUSIONS:** Overweight females are at greatest risk of developing back pain during childhood and represent a target group for prevention. Strategies to minimise childhood obesity may offer musculoskeletal benefits.

PMS16

EFFECT OF BISPHOSPHONATES ON PERIPROSTHETIC BONE MINERAL DENSITY LOSS AFTER HIP ARTHROPLASTY: AN INDIRECT TREATMENT COMPARISON OF RANDOMIZED CONTROLLED TRIALS

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OBJECTIVES: Periprosthetic bone mineral density (PBMD) loss is a common outcome after hip arthroplasty (HA). Previously published meta-analyses have confirmed a protective effect of bisphosphonates on PBMD after HA but no direct comparison on the effect of different bisphosphonates has been conducted. Therefore, we conducted an indirect treatment comparison (ITC) to evaluate the effects of different bisphosphonates on PBMD. **METHODS:** A systematic literature search in Embase, Medline, and Cochrane CENTRAL using the Ovid platform was conducted to identify randomized controlled trials (RCTs) comparing bisphosphonates versus placebo/no-treatment/others in PBMD loss after HA. Weighted mean differences (WMD) with 95% confidence interval (CI) were calculated to evaluate the effect of bisphosphonates on PBMD. Indirect estimates of alendronate and zoledronic acid versus other bisphosphonates were calculated according to the results of their direct comparisons with a common control from the random effect meta-analysis. **RESULTS:** 17 RCTs with 807 patients were included. Results from the meta-analysis of included RCTs reported a significant improvement in PBMD with alendronate (WMD: 0.11, 95%CI: 0.05-0.17; p=0.0004; WMD: 0.11, 95%CI: 0.02-0.2; p=0.01) and zoledronic acid (WMD: 0.18, 95%CI: 0.08-0.28; p=0.0003; WMD: 0.16, 95%CI: 0.06-0.26, p=0.001) after HA versus control group at 12 months and 2-4 years, respectively. However, results from ITC showed no significant improvement in PBMD with alendronate and zoledronic acid versus other bisphosphonates at 12 months and 2-4 years though zoledronic acid showed numerically higher mean difference (range: 0.14 to 0.19) in terms of PBMD improvement (12 months). **CONCLUSIONS:** Meta-analysis of RCTs found that alendronate and zoledronic acid showed significant improvement in PBMD in patients with HA versus control. However, ITC results found no significant differences for PBMD among the bisphosphonates. The results should be interpreted with caution owing to low sample size and heterogeneity in the included population. Further direct head to head trials with long term follow up are warranted.

MUSCULAR-SKELETAL DISORDERS - Cost Studies

PMS17

BUDGET IMPACT OF DENOSUMAB IN THE PREVENTION OF SKELETAL-RELATED EVENTS IN PATIENTS WITH MULTIPLE MYELOMA IN COLOMBIA

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OBJECTIVES: Multiple Myeloma (MM) is a rare and incurable plasma cell malignancy characterized by bone lesions, which are associated with substantial economic and humanistic burden. In Colombia zoledronic acid and ibandronic acid are used to prevent Skeletal Related Events (SREs). This study aims to estimate the budget impact of introducing denosumab as a new treatment for preventing SREs in patients with MM from the Colombian healthcare system's perspective over a 5-year time horizon. **METHODS:** A budget impact model was adapted to the Colombian setting by combining local epidemiological and cost data, projected uptake of denosumab (120 mg per month) from 1.9% of patients eligible to receive treatment in first year to 13.2% in fifth year (426 patients), results from a large phase 3 trial comparing denosumab to zoledronic acid and other relevant published sources. The model included the following cost components: medicines, administration, monitoring, and SRE management. The SRE management costs were estimated through a Delphi panel of Colombian healthcare experts. **RESULTS:** Over a 5-year time horizon, the introduction of denosumab was associated with cost savings of 1.9 billion Colombian Pesos (COP) overall corresponding to 77,000 Colombian pesos per patient treated per month. This represented a reduction of 1.7% of the total costs borne by the SGSSS (General System of Social Security in Health). The introduction of denosumab was associated with an increase in drug costs of 920 million COP over 5 years (+11.7%) which were more than offset by savings in administration and laboratory test costs (savings of respectively 131 million COP (-6.8%) and 79 million (-7.7%)) and most importantly by savings of 2.6 billion pesos in SRE management corresponding to 119 SREs avoided over 5 years. **CONCLUSIONS:** The introduction of denosumab for preventing SREs in MM patients is associated with considerable savings for the Colombian healthcare system.

PMS18

BUDGET IMPACT ANALYSIS OF KNEE OSTEOARTHRITIS VISCOSUPPLEMENTATION TREATMENT IN BRAZIL

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OBJECTIVES: Knee osteoarthritis is the most common form of joint disease and has been shown to be associated with aging. It affects 3.8% of the population, worldwide, and causes significant disability, impairing patient's quality of life. Current treatment options are as follows: pharmacological, non-pharmacological and surgical. Viscosupplementation is a treatment with exogenous hyaluronic acid applied to the knees for symptom relief and postponing surgery. This study aims to estimate the budget impact of viscosupplementation treatment for knee osteoarthritis. **METHODS:** The analysis was estimated using epidemiological, populational and direct costs from the Brazilian Unified National Health System databases, over a five-year time horizon. The study population was defined based on the assumption that 5% of patients with osteoarthritis would receive the new treatment. Viscosupplementation treatment scenario was constructed with one ampoule of exogenous hyaluronic acid-year added to the current treatment (drugs, health education, and physical therapy). An alternative scenario adding an oral chondroprotector to the current treatment was elaborated. A sensitivity analysis of scenarios was performed. **RESULTS:** The budget impact of viscosupplementation was estimated in BRL 343 million (USD 92.702) for the knee osteoarthritis treatment with BRL 181 million (USD 48.918) in incremental costs for this strategy. The alternative scenario with chondroprotector was estimated at the cost of BRL 704 million (USD 190.270), representing an increase of 104% compared with viscosupplementation treatment. The sensitivity analysis shows that costs and patients percentage using oral chondroprotector was the variables with great impact in this analysis. **CONCLUSIONS:** The treatment with this technology can provide a better quality of life to patients, postponing surgery and allowing the optimization of healthcare. Its adoption may result in a reduction of surgical procedures and costs as consequence of viscosupplementation treatment.

PMS19

A BUDGET IMPACT ANALYSIS OF INTRODUCING A FORCED TREATMENT PATHWAY USING THE LOWEST PRICED ANTI-TUMOR NECROSIS FACTOR AGENT FOR RHEUMATOID ARTHRITIS AND ANKYLOSING SPONDYLITIS IN THE PHILIPPINES

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OBJECTIVES: Currently, biologic agents are not included in the Philippine National Drug Formulary (the basis for the country's insurance claims and reimbursements). The Philippine Charity Sweepstakes Office (PCSO) funds the purchase of anti-tumor necrosis factor (TNF) agents and budget use must be optimized to treat as many patients as possible. We used a budget impact analysis model to estimate the number of patients who could access biologics if a forced treatment pathway was applied to prioritize the lowest-priced anti-TNF agent. **METHODS:** The model compared patient numbers served using historical PCSO purchase data with the number of potential patients who could have been served if a forced pathway was applied, whereby all patients received the lowest priced anti-TNF for 6 months, with 60% of patients staying on treatment for the remaining year and 40% switching to etanercept or golimumab due to poor response. The number