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COST ANALYSIS OF THE USE OF AN OPERATING ROOM WITH FULL-ROTATION 3-D INTRAOPERATIVE IMAGING AND NAVIGATION IN DIFFERENT SPINE SURGERIES

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OBJECTIVES: The use of navigation and intraoperative imaging permits to perform a large number of procedures more accurately and safely. The aim of this study was to estimate the cost savings achieved by an integrated operating room with full rotation 3-D intraoperative imaging and navigation (NT) compared with a standard operating room in three types of surgery: balloon kyphoplasty, lumbar fusion, and fusion cervical. **METHODS:** We developed a cost analysis through a published literature review of full rotation 3-D intraoperative imaging and navigation studies, taking into account a hospital perspective. We identified the studies with data related to hospital resource savings when compared with a standard operating room (imaging test outside the operating room). Subsequently, potential savings per patient were estimated for each surgery and were updated to euros 2013. Cost data were taken from e-Salud database and Spanish regional tariffs. **RESULTS:** The use of full rotation 3-D intraoperative imaging and NT versus a standard operating room increases surgical process efficiency due to: avoid post surgery computer tomographies to confirm the success of the procedure, increase the accuracy of surgical interventions, avoid complications and reduce the need for re-interventions, reduce the operating room time, faster patient recovery and reduce hospital length of stay. Potential savings by type of surgery were € 615, € 3,242, and € 4,458 for balloon kyphoplasty, posterior cervical fusion, lumbar fusion, respectively. **CONCLUSIONS:** The use of full rotation 3-D intraoperative imaging and NT leads to improved clinical outcomes and increased hospital efficiency in surgeries carried out with it. A 3-D intraoperative imaging system is a cost-saving strategy for balloon kyphoplasty, lumbar fusion, and cervical fusion surgeries from a hospital perspective.

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HEALTH CARE UTILIZATION AND EXPENDITURES OF OSTEOPOROSIS PATIENTS TREATED WITH ORAL BISPHOSPHONATE IN TIANJIN, CHINA

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OBJECTIVES: To estimate the health care utilization and expenditures for osteoporosis patients treated with oral bisphosphonate in Tianjin, China and examine factors associated with health care expenditures. **METHODS:** Data were obtained from Tianjin Urban Employee Basic Medical Insurance database (2008-2010) with 30% random sample of enrollees. The index date was the first pharmacy claim date of oral bisphosphonate in 2009. Patients of 40 years of age or older, continuously enrolled for 12 months prior to and following the index date, were included if osteoporosis was diagnosed and oral bisphosphonate (alendronate and etidronate) was claimed accordingly. All-cause cost, osteoporosis-related cost, drug cost, and related health care utilization were estimated at 2009 dollars. Logistic regression analysis was applied to identify factors associated with expenditures. **RESULTS:** Of 853 patients identified, 64.6% were for women. The mean age was 64.6 (± 10.4) years. Of \$2039.2 (± 2782.6) all-cause cost per person per year, out-of-pocket cost accounted for 2.1%; drug cost accounted for 61.1%; osteoporosis-related cost accounted for 37.9%. Of \$1026.5 (± 1108.8) all-cause outpatient cost per person per year, drug cost accounted for 82.3%; osteoporosis-related cost accounted for 14.6%. Of \$1012.7 (± 2586.2) all-cause inpatient cost per person per year, drug cost accounted for 39.6%; osteoporosis-related cost accounted for 61.5%. An average of 7.0 (± 3.7) outpatient visits and 0.4 (± 0.8) hospitalization admissions were found. Regression results demonstrated that patients with diabetes mellitus and nephropathy had higher all-cause cost; female patients and patients with pre-fracture had higher osteoporosis-related cost. **CONCLUSIONS:** The economic burden of osteoporosis is high for osteoporosis patients and is expected to increase considering the increment of life expectancy and the increasing number of elderly population. Greater emphasis and policy guidance should be given to the impact of osteoporosis prevention and treatment in elderly population.

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THE COST OF OSTEOPOROTIC FRACTURES IN THE ROMANIAN POSTMENOPAUSAL WOMEN POPULATION

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OBJECTIVES: Little data are available regarding the economic burden of osteoporosis on the Romanian (public payer) health care system. This retrospective chart review estimated the direct costs of osteoporotic fractures in postmenopausal women in Romania. **METHODS:** Women aged >65 years diagnosed with osteoporosis, who sustained an osteoporotic hip, wrist or vertebral fracture between December 1, 2007 and November 1, 2011 (and 1-5 years prior to study enrolment), admitted as inpatients to a sample of Romanian general and specialist hospitals were eligible; patients with multiple fractures or fractures resulting from co-morbidities were excluded. The duration of post-fracture follow-up was one year. The cost perspective included direct costs incurred by the Romanian national health insurance agency and the patients' own budgets. Health care utilization was recorded from hospital and primary care resources, and then multiplied with national tariffs to obtain total costs. Bootstrapping was conducted to generate bias corrected and accelerated confidence intervals. **RESULTS:** Five general hospitals and two specialist hospitals

in three Romanian cities participated. A total of 140 patients were included: 60 (42.8%) with hip, 68 (48.6%) with vertebral and 12 (8.6%) with wrist osteoporotic fractures. The mean [95% CI] total cost of osteoporotic fracture management was €1,155 [€1,044 - €1,304] per patient. Medications (mean [95% CI], €544 [€477 - €624]) and hospital care (€447 [€393 - €512]) were the major cost drivers, accounting for 47.1% and 42.8% of the average total cost respectively. Hip fractures were more costly than vertebral and wrist fractures (mean [95% CI]: €1,384 [€1,186 - €1,643]; €991 [€852 - €1,172]; and €934 [€659 - €1,177], respectively). **CONCLUSIONS:** This study provides the first estimates of the direct cost of osteoporotic fractures in the Romanian health care system. The results suggest that osteoporotic fractures pose a significant burden on both drug and hospital budgets. Effective treatment strategy to avoid such fractures may reduce this burden.

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MEDICAL COSTS OF PATIENTS WITH RHEUMATOID ARTHRITIS AND ASSOCIATION WITH GLOBAL DISEASE ACTIVITY IN TURKEY

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OBJECTIVES: To identify factors associated with the cost of RA care and calculated risk-adjusted costs associated with RA in Turkey. The relationships between costs of RA treatment and disease activity was also examined. **METHODS:** This cross-sectional study was performed in 10 tertiary rheumatology centers. Eligible patients were ≥ 18 years of age diagnosed as having RA for at least 12 months according to the American College of Rheumatology (ACR) 1987 criteria. Overall costs were categorized as inpatient, outpatient and pharmacy costs. Generalized linear models were used to calculate risk-adjusted direct costs. **RESULTS:** A total of 698 patients were studied. Patients' visual analog scale (VAS), patient's global disease activity (GDA) and routine assessment of patient index data 3 (RAPID-3) scores were on average 44.15, 5.19 and 5.10 respectively. Most patients were prescribed immunosuppressive medications and glucocorticoids (87.8% and 61.2%, respectively). After adjusting all variables, total annual medical cost was €2,671. The most significant portion of overall expenditures was due to pharmaceutical costs €1,987, while outpatient costs were €303, inpatient costs were €360 and co-payments were €21. 14% of patients experienced work loss due to RA. On average, annual costs due to workday loss were €480. 5.4% of patients also had other RA-related consultations, which were not covered by insurance, bringing the average annual burden to €1,600 for these patients. 6.5% of RA patients had additional costs related to their condition such as the need for a new car, apartment or special equipment, spending an additional €1,640 in 1 year. 13.7% of patients required caregivers. The average annual out-of-pocket amount paid to caregivers was €624. **CONCLUSIONS:** The annual medical cost of RA in Turkey, although significantly lower compared to European estimates, causes considerable economic burden. Drug costs constitute the major part of annual cost for RA followed by indirect costs.

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PATIENTS AS A SOURCE FOR COST OF RHEUMATOID ARTHRITIS STUDY

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OBJECTIVES: To perform the cost of rheumatoid arthritis analysis based on inquiry study with patients. **METHODS:** It is a micro costing study which was conducted between August and December 2012. The information was gathered with the support of the Association of patients with rheumatoid arthritis. The questionnaire was made and distributed to patients waiting in front the physicians' offices. Clarification in case of missing data was made by phone. The questions aimed to gather basic information about the characteristics of the patients, their pharmacotherapy, frequency of physicians' visits, hospitalizations, and their health status self-evaluation. The direct health costs were calculated based on patients' answers and insurance fund tariff. **RESULTS:** A total of 119 patients participated in the study, and nineteen were excluded due to insufficient information. Twenty-two patients were male and 78 were female aged 54.78 years on average. Almost half of the patients (42 patients) were employed. Thirty-four of patients had duration of the RA less than 5 years, 19 had duration between 5-7 years, another 14 patients had duration of between 7-10 years and 33 patients had duration more than 10 years. The total cost for the treatment of the patients for one month was 82 523 BGN (per patient, per month on average 825 BGN). To one quarter of the patients a biological treatment was prescribed with a total cost of 74 026 BGN per year. Ninety-two of the patients answered that they are strictly taking their medicines. Our study shows that most of the patients doesn't know what medicines they are taking or even doesn't know their dosing regime. **CONCLUSIONS:** The percentage of the patients that are not following the doctor's prescription is very high and their reliability as a source of cost studies is not sufficient that impose the need of patient education.

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WORK PRODUCTIVITY LOSS DUE TO RHEUMATOID ARTHRITIS IN POLAND. RESULTS OF CROSS-SECTIONAL STUDY OF OUTPATIENTS WITH CHRONIC INFLAMMATORY DISEASES AND COMPARISON WITH SELECTED STUDIES

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OBJECTIVES: To measure productivity loss of RA patients in Poland compared to results of selected studies. **METHODS:** In this study consecutive patients in