groups in high risk. The aim of the study is to evaluate the economic consequences of the vaccination against HAV in population groups at high risk and to compare the results with the vaccination of all 1-year old children in the population. **METHODS:** Cost-benefit analysis was performed based on epidemiologic data for the number of incidents in the high risk groups and the treatment cost of the HAV infected individuals. Those costs were compared with the cost of vaccination. Two vaccination scenarios were created 1. Prophylactic one dose vaccination and 2. One initial and one buster dose application. The validity of the results was tested with sensitivity analysis using tornado diagram. **RESULTS:** The vaccination of all people in the high risk group (n=32 606) induces savings for the health care system because the cost of vaccination is less than the cost of treatment of the people with HAV infection (n=4565). The cost of vaccination varies from €1 257 322 to €2 514 646 depending on the vaccination regimen: "first scenario" and "second scenario", respectively. The expenditures for infected peoples' therapy are €2 547 254. Thus the net savings account for €1 289 932 and €32 608, respectively. **CONCLUSIONS:** The analysis confirms that the vaccination against hepatitis A infection is cost-saving for the health care if performed in groups at high risk and in the periods of epidemic outbreaks.

PIN30

PRELIMINARY ASSESSMENT OF THE COST OF TREATMENT FOR CHRONIC HEPATITIS C VIRUS INFECTIONS WITH SOFOSBUVIR AND FIRST GENERATION ANTIVIRALS ACROSS EIGHT COUNTRIES

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OBJECTIVES: The new wave of HCV drugs reaching the market in 2014 offer higher cure rates and shorter treatment times; however, the new antivirals have been met with concerns regarding the costs associated with the new drugs by payors and the WHO. We have set out to examine the costs of treatment with sofosbuvir, compared to first generation antivirals in eight countries. **METHODS:** We examined the ex-manufacturer price of sofosbuvir, telaprevir and boceprevir in Norway, Denmark, Germany, Luxembourg, Portugal, Slovenia, Turkey, and the United States. Treatment costs were calculated using standard of care protocols for treatment of HCV genotype 1, including individual daily dosage strength and length of recommended treatment for each antiviral. Interferon and ribavirin costs, any potential discounts or rebates negotiated with payors and potential follow-up courses of therapy for sofosbuvir were excluded from the study. Prices were extracted from IHS Life Sciences' international pricing database POLI. All foreign currency was converted to USD using XE Currency Converter for comparison. **RESULTS:** Costs of treatment with sofosbuvir varied significantly across the eight countries, being highest in the US at USD84,000 then Portugal at USD75,816 down to USD52,051 in Norway. Telaprevir and boceprevir treatment costs range from a low of USD21,534 and USD14,111 in Turkey respectively, to a high of USD66,155 and USD40,120 in the US. On average across the eight countries, treatment with sofosbuvir was 104% higher than telaprevir, and 187% higher than boceprevir, based on the list price. **CONCLUSIONS:** Our preliminary assessment has highlighted the variable treatment costs of HCV antivirals across countries. Comparisons of treatment costs with next generation treatments versus first-generation antivirals will see expenditure for HCV therapeutics increase significantly. However, sofosbuvir has demonstrated cure rates of over 95% in genotype 1 HCV patients with a favourable safety profile, thus reducing costs of re-treatment, medical visits, and treatment of advanced liver disease.

PIN31

COST ANALYSIS FOR MANAGEMENT AND PREVENTION OF HEPATITIS B VIRUS REACTIVATION

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OBJECTIVES: To prevent reactivation of hepatitis B virus (HBV) following chemotherapy or immunosuppressive therapy, appropriate clinical managements including HBV screening and antiviral prophylaxis for patients at risk of reactivation should be provided. Cost information of managing HBV reactivation is needed to evaluate cost-effectiveness of HBV prevention strategies in Japan. **METHODS:** Annual number of patients who have received cancer chemotherapy, biologic therapy for rheumatoid arthritis, or stem-cell / organ transplantation was estimated using information of national statistics and expert opinions. Costs of HBV screening and antiviral prophylaxis were calculated by following the HBV reactivation management guideline and reimbursement prices. A Markov model was created to compare two vaccination strategies of HBV infections (current selective vaccine program vs. new universal vaccine program) by considering risk of receiving chemotherapy or immunosuppressive therapy, management costs of HBV reactivation, and disease-specific mortality, during 90 years of follow-up. **RESULTS:** Costs for HBV reactivation management were estimated 688 yen per person in selective vaccination strategy compared with 350 yen per person in universal vaccination strategy, with annual discount rate of 3%. On one-way sensitivity analysis, estimated costs were sensitive to annual discount rates and risks of HBV infections. **CONCLUSIONS:** Absolute difference in the HBV management costs was relatively small compared with vaccine program costs. Since the management of HBV reactivation was not always provided for all patients at risk, a further cost analysis should be conducted by reflecting real-world clinical practice.

PIN32

MEDIAN HOSPITALIZATION COST AND LENGTH OF STAY FOR CARBAPENEM-RESISTANT VERSUS CARBAPENEM-SENSITIVE PATIENTS IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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OBJECTIVES: To find out the average cost of hospitalization and length of hospital stay for patients infected with carbapenem-resistant bacteria and compare it with that of patients infected with carbapenem-sensitive bacteria. **METHODS:** A cross sectional study was carried out for 3 months and the data for hospitalization cost was collected for the patients with carbapenem resistant and carbapenem sensitive infections from the medicine ICU and the microbiology department for 114 patients with bacterial infections who were admitted to Intensive care unit. The data was analyzed for the type of infection and the average hospitalization cost. The median hospitalization cost was calculated for both the group of patients. **RESULTS:** Out of 247 patients admitted in the ICU during a three month period 70 (28.34%) were found to be having carbapenem-resistant infections and 44 (17.81%) were found to have carbapenem-sensitive infections. The median length of stay in the hospital was 9 days for carbapenem-sensitive patients while 23.5 days in case of carbapenem-resistant patients. The median hospitalization cost was found to be 40185 INR in case of carbapenem sensitive patients while it was 126889.5 INR in case of carbapenem-resistant patients. **CONCLUSIONS:** Carbapenem-resistance is observed to be increasing the morbidity and cost burden on the patients substantially. Increased length of hospital stay leads to an increase in the incidence of Nosocomial infections which further leads to the increased morbidity, mortality and cost burden on the society.

PIN33

TREATMENT OF MRSA PNEUMONIA: ECONOMICAL AND CLINICAL COMPARISON OF LINEZOLID VERSUS VANCOMYCIN

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OBJECTIVES: Infections with methicillin resistant *Staphylococcus aureus* (MRSA) pathogens represent a substantial economic burden for the health care system. Although the expenses directly related to the antibiotics used for the treatment of MRSA infections are generally negligible in relation to the total MRSA-related hospital costs, the prices of the drugs often influence the therapy decisions. The objective of this study was to investigate – in a clinical routine setting – the overall costs of stay on intensive care unit (ICU) and the clinical effectiveness of treatment with linezolid compared to vancomycin in patients with MRSA pneumonia. **METHODS:** This was a retrospective analysis of reimbursement and medical data of adult patients who were treated for MRSA pneumonia in German hospitals between 2008 and 2012. Propensity score adjustment was applied to reduce the effect of confounding. **RESULTS:** 95 of the 226 patients included received linezolid as initial therapy for MRSA pneumonia and 131 received vancomycin. The analysis of the total costs of stay on ICU did not reveal any major differences between the two treatment groups (cost ratio linezolid/vancomycin: 1.29; 95% confidence interval (CI): 0.84 – 1.98; $p = 0.24$). Analyses of clinical data showed a decreased likelihood of therapy failure (= switch to another antibiotic) (logistic regression analysis; odds ratio linezolid/vancomycin: 0.183; 95% CI: 0.052 – 0.647; $p < 0.01$) and a decreased risk of dying in hospital (Cox proportional hazard regression analysis; hazard ratio linezolid/vancomycin: 0.508; 95% CI: 0.305 – 0.846; $p < 0.01$) in the linezolid group. **CONCLUSIONS:** Despite higher drug acquisition costs, the total costs of stay on ICU were not significantly higher in patients receiving linezolid than in patients receiving vancomycin. The clinical effectiveness, on the other hand, was superior: Both, the rate of therapy failures and the all-cause hospital mortality rate were substantially lower in patients who received linezolid.

PIN34

FIXED DOSE COMBINATIONS OF NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITOR FOR NAÏVE PATIENT WITH HIV INFECTION IN RUSSIA: COST COMPARISON ANALYSIS

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OBJECTIVES: To compare treatment costs for the fixed dose combination (FDC) tenofovir and emtricitabine (TDF/FTC) versus FDC abacavir and lamivudine (ABC/3TC) each in combination with efavirenz (EFV) in treatment-naïve adults with HIV-1 infection in Russia. **METHODS:** A mathematical model was developed in Microsoft Excel to evaluate costs of treatment, including drug (1st and 2nd lines of therapy) and patient management costs. In the model individuals remained on their current regimen or moved to the 2nd line of therapy after the first 48 weeks on therapy. Transition probabilities were based on the proportion of patients with viral response measured as HIV-1 RNA < 50 copies per milliliter from the clinical trial with TDF/FTC + EFV vs ABC/3TC + EFV head-to-head comparison. Cost calculations were based on registered drug prices, reimbursement rates in public medical insurance and data on government procurement in Russia in 2014. **RESULTS:** It was expected that after the 48 weeks of treatment 71.0% of patients in TDF/FTC + EFV group and 59.4% of ABC/3TC +EFV remain on the initial regimen. The total average costs per patient for 96 weeks of therapy, including drug (1st and 2nd lines of therapy) and patient management costs, were lower for TDF/FTC + EFV (€6,528) than for ABC/3TC + EFV group (€7,123). **CONCLUSIONS:** FDC TDF/FTC in 1st line therapy in treatment-naïve adults with HIV-1 infection in combination with EFV was predicted to be cost-saving compared with FDC ABC/3TC+EFV for 96 weeks of treatment in Russian Federation.

PIN35

POTENTIAL RISK-SHARING AGREEMENTS FOR VACCINES

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OBJECTIVES: After each negotiation between a health care provider and a payer, financial risks exists that may jeopardize the payer's budget. Risk-sharing agreements (RSAs) in medical care can be used to reassure payers on budget trajectory. This has grown during the recent years resulting from increased budget restric-

tions. Typically, RSAs have been used for costly products for diseases with a high unmet need such as in oncology. To date, experience with RSAs in vaccines is limited. In this conceptual research we intend to identify RSAs that would be relevant and operable for vaccination programs. **METHODS:** We described the different types of uncertainties and associated financial risks a vaccine payer faces in the real-world setting. We conducted a literature review to list the various RSAs proposed in the field of therapeutics. We then assessed how existing RSAs can mitigate those vaccines payers' risks and evaluated those contracts for a hypothetical vaccine. **RESULTS:** Vaccine specificities (few doses, potentially a large target population, herd effect and delayed benefit) need to be accounted for when designing RSAs. Financial risks in vaccination budget may arise from uncertainty on effectiveness/safety, uptake, supply, and real-world implementation. RSAs, categorized in either cost-sharing or performance-based risk-sharing, could enable vaccine payers to diminish those risks. As for drugs, cost-based deals would be easier to implement for vaccines than performance-based RSAs. The second should only be used when vaccine effects are observed on the short-term. Insurance mechanisms such as real-option pricing can be used to quantify the risk and price the associated RSA. **CONCLUSIONS:** RSA can be used to mitigate financial risk associated with the access to vaccines. Based on the risks they entail, RSAs for vaccines can be viewed as real-option offered by the manufacturer to the payer. However their practical implementation is likely to differ from therapeutics.

PIN36

THE COST-EFFECTIVENESS OF TELAPREVIR TRIPLE THERAPY IN TREATMENT OF NAÏVE CHRONIC HEPATITIS C PATIENTS IN TURKEY

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OBJECTIVES: As evidenced in ADVANCE and IDEAL studies, sustained virologic response (SVR) rate in treatment-naïve (TN) CHC patients increased from the level of 40% to about 75% when TVR was added to standard of care. In this cost-effectiveness model, PR is compared with TVR triple therapy (with response guided treatment approach) in TN CHC patients. **METHODS:** Analysis population includes TN patients infected with genotype 1 HCV. Progression of HC is simulated by a Markov model with 1-year duration of cycles within life-time horizon. The sources of clinical inputs are ADVANCE and IDEAL studies, in which TN CHC patients had been randomized to TVR+P2aR or P2aR and to TVR+P2bR or P2bR, respectively. The sources of economic inputs are the drug price list (National Ministry of Health, June 2014) and procedure price list (National Institution of Security, April 2014). The analysis was performed from the point of view of the governmental payer, with direct costs only. The discount rate was set at 2%, national GDP per capita: 8.009€, year 2013, currency rate: 2.80 TL/Euro. **RESULTS:** Total costs of strategies were 21.938€, 17.933€ and 17.932€, for TVR, P2aR and P2bR, respectively. Corresponding QALYs were 16.19, 15.64 and 15.57 years. Therefore 0.55 and 0.62 QALYs were gained with extra costs of 4.018€ and 4.109€ (vs P2aR and P2bR, respectively). Thus, TVR was cost-effective as compared to P2aR and P2bR, taking the national GDP as the informal willingness-to-pay threshold. **CONCLUSIONS:** Although the initial cost of treatment with TVR is higher than peg-interferon and ribavirin, in CHC patients, the cost savings that will be realized with the very successful clinical prognosis make treatment with TVR clearly cost-effective. Therefore, all TN CHC patients should be considered as a candidate of TVR treatment.

PIN37

THE COST-EFFECTIVENESS OF TELAPREVIR TRIPLE THERAPY IN TREATMENT-EXPERIENCED CHRONIC HEPATITIS C PATIENTS IN TURKEY

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OBJECTIVES: As evidenced in REALIZE study, sustained virologic response (SVR) rate increased from the 17% to 63% in treatment-experienced (TE) chronic hepatitis C (CHC) patients, when telaprevir (TVR) was added to standard of care. In this cost-effectiveness model, PR is compared with TVR triple therapy (with response guided treatment approach) in TE CHC patients. **METHODS:** In this cost-effectiveness model, TVR+PR is compared with PR. Analysis population includes TE and unresponsive or failed patients infected with genotype 1 HCV. Progression of CHC is simulated by a Markov model with 1-year duration of cycles within life-time horizon. The source of clinical inputs is REALIZE study, in which TE CHC patients had been randomized to TVR+PR or PR. The sources of economic inputs are the drug price list (National Ministry of Health, June 2014) and procedure price list (National Institution of Security, April 2014). The analysis was performed from the point of view of the governmental payer, with direct costs only. The discount rate was set at 2%, national GDP per capita: 8.009€, year 2013, currency rate: 2.80 TL/Euro. **RESULTS:** Total costs of strategies (medications and other components) were 29.735€, 28.938€ and 28.343€, for TVR, P2aR and P2bR, respectively. QALYs gained was 1.25 years with TVR+PR with extra costs of 797€ and 1.393€ (vs P2aR and P2bR, respectively). Corresponding ICER values were 640€/QALY and 1.118€/QALY for TVR+PR vs P2aR and TVR+PR vs P2bR, respectively. Thus, TVR was definitely cost-effective. **CONCLUSIONS:** Although the initial cost of treatment with TVR is higher than PR, in CHC patients, the cost savings that will be realized with the very successful clinical prognosis make treatment with TVR clearly very cost-effective and close to cost neutral. Therefore, all TE CHC patients who not responded or failed after a response, should be considered as a candidate of TVR treatment.

PIN38

ECONOMIC COMPARISON OF EMPIRICAL VERSUS DIAGONSTIC-DRIVEN STRATEGIES FOR IMMUNOCOMPROMISED PATIENTS WITH SUSPECTED FUNGAL INFECTION RESULTS FROM A CHINESE PAYER PERSPECTIVE

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OBJECTIVES: To examine the impact on costs and outcomes that may occur in neutropenic patients when treating for suspected invasive fungal infections (IFIs) caused by *Aspergillus* with typical empirical approach (EA) versus the recently proposed "diagnostic-driven" (DD) approach in China. **METHODS:** A decision-analytic model was used to estimate total costs and predicted survival associated with EA and DD approaches in Shanghai, China. The population included patients aged >= 18 years with hematological malignancies or autologous/allogeneic stem cell transplantation expected to be neutropenic for >=10 days, and without prophylactic antifungal treatment. Rates of IFI incidence, IFI captured by EA, overall mortality, and IFI-related mortality (10.9%, 30%, 10.7% and 28.6%, respectively) were obtained from the literature. Survival rates for each strategy were generated based on the proportion of patients with identified and appropriately treated IFI. Treatment patterns with EA and DD approaches and resource use assumptions were based on the opinion of five clinicians from three top hospitals in Shanghai. The total medical costs (in 2014 Chinese Yuan) included antifungal drug cost, treatment-related adverse events cost, and cost of other medical resources. City-specific costing sources were used wherever possible. **RESULTS:** Both approaches had similar survival rates (90.76% vs. 91.33% for EA and DD, respectively). Antifungal drug cost per patient was ¥2,813 for EA and ¥2,307 for DD strategy. Although DD patients incurred a higher cost on PCR/GM testing (¥111 vs ¥88), the total medical costs of DD were substantially lower (¥2,563) than that of EA strategy (¥4,298) due to fewer patients receiving antifungal agents (DD: 7.4%; EA: 12.5%) with targeted IFI treatment. **CONCLUSIONS:** This study suggests that the DD approach has the potential to initiate antifungal treatment in a more targeted population. It is expected to be a cost saving management strategy for immunocompromised patients with suspected IFI in the context of China.

PIN39

THE BURDEN OF CLOSTRIDIUM DIFFICILE (CDI) INFECTION IN HOSPITALS, IN DENMARK, FINLAND, NORWAY AND SWEDEN

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OBJECTIVES: Calculate the hospital cost of treating patients with Clostridium difficile (CDI) in Denmark, Finland, Norway and Sweden. **METHODS:** National patient databases from each country provided the number of patients, hospitalisations and length of stay (LOS) for CDI patients (ICD-10 code A047); year 2011 in Finland and Sweden and year 2012 in Denmark and Norway. In Norway and Sweden hospitalisation cost was based on the DRG cost for CDI patient and in Denmark and Finland the cost per bed day. **RESULTS:** Sweden had the highest number of CDI patients and hospitalisations due to CDI during one year (3,425 patients and 4,723 hospital stays), then Finland (1,929 patients and 2,587 hospital stays), Denmark (1,804 patients and 2,465 hospital stays) and Norway (1,126 patients and 1,418 hospital stays). On average the patients in Sweden were hospitalised with CDI diagnosis 1.38 times during one year and the corresponding figures was in Denmark 1.37, Finland 1.34 and Norway 1.26. The mean LOS for patients with CDI as primary diagnosis varied from 7.0 days in Norway to 14.7 days in Finland (9.0 days, Denmark and 8.6 days, Sweden). The mean cost per CDI hospitalisation was lowest in Norway (€4,073 per patient), followed by Sweden (€6,261 per patient), Denmark (€7,234 per patient), and Finland (€10,231 per patient). The total cost for treating the hospitalised CDI patients during one year was approximately €11 million in Norway (5.1 million people), €15 million in Finland (5.4 million people), €18 million in Denmark (5.6 million people) and €30 million in Sweden (9.7 million people). **CONCLUSIONS:** The total cost of treating the CDI patients ranges between €11-30 million per country and year, and approximately 26-38% of these costs are due to recurrence of CDI. By lowering the number of recurrences, there would be a potential for large cost savings.

PIN40

EPIDEMIOLOGY AND COSTS OF VARICELLA AND HERPES ZOSTER IN GERMANY

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OBJECTIVES: Detailed and valid information on burden of disease is an indispensable cornerstone for cost-effectiveness analyses. The aim of this study was to estimate the epidemiological and economic burden of varicella and herpes zoster (HZ) in Germany in order to generate important data for a subsequent model-based analysis. **METHODS:** Analysis of the epidemiology and the one-year costs of varicella-zoster virus-related diseases/complications were based on 2010/2011 claims data from a large German sickness fund. Insurants were included in the study when they had a varicella and/or HZ diagnosis in 2010, and then were followed for one year after the date of the initial diagnosis. Disease-attributable costs were either calculated by diagnosis-specific identification of cost items or by use of a control group approach. **RESULTS:** The study population included 12,710 insurants with varicella and 35,636 insured persons with HZ. Age-standardised incidence rates were 1.55 and 5.5 per 1,000 person-years for varicella and HZ, respectively. The most frequent complication of HZ was post-herpetic neuralgia (PHN) with an overall proportion of 20.76%, ranging from 2.66% under the age of 10 years to 26.03% in the age group of 80 years and above. When using a time-based algorithm instead of a pure diagnosis code-based approach overall PHN proportion was much lower (5.29%). Average direct costs of varicella were €76.41, ranging from €45.92 in children <5 years of age to €444.28 in people aged ≥60 years. Direct costs of HZ (including PHN) were €238.47 with a range from €88.51 in children <10 years of age to €504.40 in people aged ≥80 years. **CONCLUSIONS:** Varicella-zoster virus-related diseases/complications cause a remarkable epidemiological and economic burden on the German health care system. Incidence and costs of varicella and HZ are highly age-dependent. Furthermore, the proportion of PHN was strongly influenced by the algorithm used to identify PHN cases.