tion on hospital care was only collected for one season. More individualised estimates of hospitalisation costs may be obtained with patient characteristics such as gestational age and presence of BPD.

**PIN 22**

**PHARMACOECONOMIC EVALUATION OF STREPTOMYCN VERSUS ETHAMBUTOL AS PRIMARY ANTITUBERCULAR DRUGS IN LAGOS UNIVERSITY TEACHING HOSPITAL**

Suleiman IA, Tayo F
College of Medicine, University of Lagos, Lagos, Nigeria

Available resources are very for this research is limited, hence the need to be cost conscious. **OBJECTIVES:** The purpose of the research was to know which of the two antitubercular drugs (both of which are still actively used in Nigeria) is more cost effective in phase I treatment of tuberculosis and to influence decision making. **METHOD:** Cost Effectiveness Analysis was the applied tool for these methods, and the prescribed/dispensed antitubercular drugs between 1997 and 1999 were reviewed retrospectively. Relevant information such as diagnosis, prescribed/dispensed drugs, dosage, duration of therapy, physician’s remarks, and cost were obtained from patient case notes and dispensed prescriptions. These were used in conjunction with time and motion studies and standard cost accounting technique. The cost per defined daily dosage (DDD) was calculated, and the costs of drug/disposables acquisition and overhead costs were included in the analysis. The literature was reviewed for positive and negative consequences of the considered options. Outcome measure of effectiveness was improved in signs and symptoms of tuberculosis/eradication of Mycobacterium. A decision table was used to arrive at the effectiveness rating, which was compared using chi square analysis. **RESULTS:** The analysis showed that ethambutol tab is more cost effective than streptomycin inj, which is still widely in use. The cost/DDD of ethambutol was N4.00/unit effectiveness while that of Streptomycin was N65.00/unit of effectiveness. The decision did not change when some variables were altered in favour of streptomycin inj. (the less cost effective option). Increasing the cost of ethambutol by several folds, increased the effectiveness rating of streptomycin to that of ethambutol etc., which did not change the conclusion. **CONCLUSION:** Streptomycin inj. should no longer be considered as a primary drug in the treatment of tuberculosis, which is still very common in Nigeria. However, the various contraindications/side effects of ethambutol such as optic neuritis need to be monitored for in patient. Economic evaluation of therapy is necessary to avoid trading-off of more cost effective therapeutic options.

**PIN 23**

**PHARMACOECONOMIC EVALUATION OF ANTIBACTERIALS UTILIZATION IN PRIMARY, SECONDARY AND TERTIARY HOSPITALS IN DEVELOPING ECONOMY**

Suleiman IA, Tayo F
College of Medicine, University of Lagos, Lagos, Nigeria

The use of economic analysis is increasingly advocated by funding agencies to achieve efficient cost containment strategy. **OBJECTIVES:** To inform the use of antibacterials in chosen hospitals and to propose inclusion of economic evaluation of drug therapy in policy formulation and decision-making. **METHODS:** Cost Minimisation Analysis; the most applicable tool for generic equivalent drugs was used. This was compared in three health institutions. These include a tertiary, Lagos University Teaching Hospital (LUTH); a secondary, General Hospital Lagos (GHL); and a primary, Health Centre Harvey Road, Yaba (HCHR), as well as a community pharmacy outlet for prescriptions of GHL. Relevant information such as diagnosis, cost of drugs, dosage, duration of therapy among others were obtained from patient case notes for which antibacterials are the mainstay of therapy. These were compared using student ‘t’ test. The outcome measure was eradication of bacterial in question by the respective antibacterials. **RESULTS:** The use of more expensive branded drugs is very rampant even when the generic equivalence is available. The difference in their cost/DDD is very significant (P < 0.05; n = 1,576 in LUTH, n = 1,200 in GHL, n = 900 in HCHR, n = 750 in the community pharmacy). For example, in LUTH, the cost/DDD of ciprofloxacin was N310 for branded product and N160 for generic. Also observed were some irrational combinations especially in the primary health centre. **CONCLUSION:** A form of economic evaluation of drug therapy is necessary for health policy and decision makers to be more informed on cost implication of their choices and trade-offs. Systematic appraisal of available options needs to be well understood in view of limited resources. Appropriate and timely intervention for sustainable improvement is mandatory for costs to be greatly minimised.

**PIN 24**

**IMPACT OF INFLUENZA VACCINATION ON WORK PRODUCTIVITY IN A COLOMBIAN COMPANY: COSTS AND BENEFITS FOR THE EMPLOYER**

Tasset A, Baron-Papillon F, Rey E, Follet A

1Aventis Pasteur International, Lyon, France; 2Mapi Values, Lyon, France; 3Aventis Pasteur; Santafe de Bogota, Colombia

**OBJECTIVES:** To evaluate the impact of an influenza vaccination campaign: decrease of attack rates of
influenza-like illness (ILI), work productivity and indirect costs (potential cost savings) for the employer.

**METHODS:** A prospective observational study was conducted among the workforce of a bank of Bogota from October 2000 to May 2001, with 2 cohorts: influenza vaccinated (volunteers) and not vaccinated. Self-administered monthly questionnaires collected socioeconomic and health status information, data on ILI symptoms and sick leaves. Vaccine’s adverse events were reported one week after injection. Cost-benefit analyses were performed from the employer perspective using individual operating income and salary values. Costs of vaccination included vaccine administration and adverse events. Loss of productivity was assessed by sick leave days, days of reduced effectiveness at work due to being not well because of ILI. RESULTS: Among the 759 subjects, 56% vaccinated and 44% not vaccinated, the attack rates of ILI were respectively 15% versus 47%, with presence of usual symptoms (cough, chills, muscle aches ...) and fever in 39% of the reported ILI. Absence rates for ILI were similar in the 2 cohorts: 4.6%, with a mean of 3.1 days of sick leave, as well as the proportions of people feeling not well because of ILI: 93%, with a mean of 4 days before being well again. Using the realistic hypothesis of a reduced effectiveness of 30% when the patient is not well because of ILI, global cost savings were US$7469 for the study population and US$59 per individual i.e. a cost-benefit ratio of 20%. CONCLUSIONS: Among the studied volunteers, ILI has significant impact on work productivity, in terms of indirect costs, even if considering lower work effectiveness rates’ hypotheses, in conditions of mild outbreak of influenza. Possible expansion of influenza vaccination to all the company could lead to important employer cost savings.

**Vaccination in Healthy Working Adults: What Return on Investment for Companies? An International Perspective**

Anne T, Plun-Favreau J
Aventis Pasteur International, Lyon, France

**OBJECTIVE:** In healthy working adults, it has been documented that vaccination programs may yield cost-savings by avoiding absenteeism and loss of productivity. However few studies provide an international perspective. The objective of this project is to develop a multinational measurement of the cost-benefit aspect of vaccination programs against influenza, typhoid fever and hepatitis A in an adult population working in various countries and industrial sectors.

**METHODS:** A cost-benefit model has been developed in order to calculate the cost-benefit result of vaccination programs. The costs of the vaccination alternative, including associated immunization services are thus compared to the benefits i.e. avoided absenteeism and loss of productivity by preventing the diseases. Those benefits are represented by three different items being 1) Avoided loss of labor costs; 2) Avoided cost of replacement; and 3) Avoided loss of operating income. Companies published financial data from four countries (Australia, Turkey, Brazil and Philippines) have been sampled and gathered in order to yield an average cost-benefit result by country. A sensitivity analysis and break-even analysis have been performed on the main criteria involved in the calculation.

**RESULTS:** Considering the three diseases, the results obtained show an average cost-benefit ratio of US$11,086.81 per year. The net cost-savings per employee vaccinated and per year ranged from US$13.54 (in the Philippines) to US$80.17 (in Turkey).

**CONCLUSION:** This predictive approach aimed at assessing the return on investment for companies in case of funding a vaccination program proposed to the employees. The simulations based on aggregated published financial data show a cost-savings specific to each country for different industrial sectors. It deserves further analysis on a larger sample of companies in other countries and industrial sectors.

**The Cost Effectiveness of Safe and Appropriate Use of Injection Policies in Health Care Settings**

Dziekan G, Chisholm D, Johns B, Rovira J, Hutin Y
1World Health Organization, Geneva, Switzerland; 2World Bank, Washington, DC, USA

**OBJECTIVES:** In developing and transitional countries, poor injection practices transmit potentially life-threatening pathogens. We modelled the cost effectiveness of safe and appropriate use of injections policies in terms of cost per Disability Adjusted Life Year (DALY) prevented.

**METHODS:** A mass action model estimated the incidence of injection-associated Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV) infections. We reviewed the effectiveness of interventions to reduce injection overuse or unsafe practices. DALYs were age-adjusted and 3% discounted. We quantified the resources needed to implement effective interventions and estimated their cost by region. The cost effectiveness compared the effects of a “Do nothing” scenario with that of an intervention on a theoretical 2000 cohort using WHO Global Burden of Disease regions and a 30-year analytic horizon.

**RESULTS:** Preliminary results suggest that worldwide, re-use of injection equipment in 2000 accounted for 32%, 40% and 5% of new HBV, HCV and HIV infections respectively, causing the loss of 9,177,679 DALYs between 2000 and 2030. Interventions in 2000 for the safe (provision of single-use syringes, average effectiveness: 95%) and appropriate use (patients-providers interactional group discussions, average effectiveness: 30%) would prevent 8,856,460 DALYs and cost US$463.4 million (range by region of the cost per DALY prevented: 6.7–1652). Compared to other regions, the cost per DALY prevented was lower in...