$P < 0.05$) among fully vaccinated children (n = 101) when compared to unvaccinated children (n = 141). Secondly, there was no significant reduction in ILI and visits to physician among partially vaccinated children (n = 52) versus unvaccinated children (OR 1.54 [0.77–3.07], $P = 0.24$ and OR 1.81 [0.65–5.27], $P = 0.30$) respectively. **CONCLUSIONS:** Based upon these findings, it is concluded that seasonal influenza vaccine is effective in reducing the ILI and visits to physician for ARI among fully vaccinated Indian children. Partially vaccinated children had no statistically significant protection against ILI and visits to physician. To the best of our knowledge, this is the first report on the clinical effectiveness of seasonal influenza vaccine in healthy Indian children.

PIN9

EFFICACY AND SAFETY OF RALTEGRAVIR IN TREATMENT NAIVE HIV+ PATIENTS: A MIXED TREATMENT COMPARISON APPROACH

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OBJECTIVES: To assess the efficacy and safety of raltegravir (integrase strand transfer inhibitor) compared to non-nucleoside reverse transcriptase inhibitors (nevirapine, efavirenz) and protease inhibitors (lopinavir, atazanavir) in treatment-naive patients with HIV infection. **METHODS:** A systematic literature search identified seven treatment naïve trials comparing raltegravir to other treatments of interest via the common comparator efavirenz. This network of evidence was analyzed using a Mixed Treatment Comparison (MTC). Selected outcomes were the proportion of patients with plasma HIV RNA less than 50 copies per mL at 48 weeks (efficacy) and discontinuations (safety). A Bayesian approach was chosen and implemented in WinBugs. Fixed-effect and random-effect models were run and the most appropriate model was selected based on the performance of the Monte Carlo simulations and the Deviance Information Criterion. Results were reported as median odds ratio, relative risk, and risk difference of raltegravir versus each comparator and associated 95% credible intervals. Bayesian inference also allows for treatment to be ranked, by calculating the proportion of simulations in which this treatment performs "best" in terms of relative efficacy/safety. **RESULTS:** For both efficacy and safety outcomes the fixed-effect models were preferred. Efficacy results showed a significant advantage of raltegravir compared to atazanavir, lopinavir, and nevirapine. Raltegravir also performed numerically better than efavirenz, and overall had a 71% probability of being the more efficacious treatment on this outcome. Safety results also favored Raltegravir, but significance was only reached compared to nevirapine. **CONCLUSIONS:** The MTC suggests that raltegravir has an advantage that is at least numerical and in some cases statistically significant over its comparators in term of achieving plasma HIV less than 50 copies per mL and avoiding discontinuation, providing additional data that supports the use of raltegravir in this indication.

PIN10

A SYSTEMATIC REVIEW OF THE ATTRIBUTION OF HUMAN PAPILLOMAVIRUS TYPES AMONG CERVICAL INTRAEPITHELIAL NEOPLASIA AND CERVICAL CANCERS IN JAPAN BY SAMPLING METHODS

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OBJECTIVES: Estimating vaccine effectiveness is crucial for policymakers. Human Papillomavirus (HPV) type-specific attribution to cervical cancers and precancers is one key factor in this regard for HPV vaccination and cancer screening. Among a number of reports on HPV type prevalence, only a few investigated attributions considering multitype infections and sampling methods. The objective of this study was to elucidate HPV type-specific attribution in Japanese women. **METHODS:** A systematic review of published studies was conducted. Sampling methods were divided into two categories: one group consists of studies where HPV DNA was extracted from exfoliated cells, and another group consists of those using tissue specimens obtained by biopsy or surgical resection. To elucidate interrelationships among multiple HPV types in contributing to lesion development, attribution of each HPV was estimated assuming a fractional allocation of multitype infection. **RESULTS:** The overall positivity for any HPV was consistently higher in the exfoliated-cell group. On the other hand, attribution of HPV types 16 and 18 to cervical lesions was nominally higher in the tissue-specimen group. Attribution of HPV types 16 and 18 to cervical squamous cell carcinoma (SCC) was estimated as 47.4% (95% CI: 43.8–51.1) and 9.4% (7.5–11.7) in the tissue-specimen group and 43.3% (38.5–48.2) and 7.6% (5.4–10.6) in the exfoliated-cell group, respectively. **CONCLUSIONS:** HPV positivity was higher in the exfoliated-cell group while type 16/18 attribution was nominally higher in the tissue-specimen group. Attribution of HPV type 16 to SCCs and adenocarcinomas (AC) derived from tissue specimens, after adjustment for multitype infections, was ~20% lower in Japanese women compared to data previously reported for US women. Type 18 attribution in Japanese women was similar to the United States for SCC and 10% lower for AC.

INFECTION – Cost Studies

PIN11

COST ANALYSIS OF ADVERSE DRUG EVENTS GROM GPO-VIR®S AND GPO-VIR®Z IN PEOPLE LIVING WITH HIV/AIDS IN THAILAND

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OBJECTIVES: GPO-VIR® S (Stavudine, Lamivudine, Navirapine) has been used in people living with HIV/AIDS in Thailand since 2002. Drug resistance and adverse drug events (ADEs) are likely to be found. To solve this problem, GPO-VIR® Z (Zidovudine, Lamivudine, Navirapine) has been developed since 2005. Therefore, this study was conducted to evaluate the cost of ADEs found in people living with HIV/AIDS receiving GPO-vir® S compared with GPO-vir® Z. **METHODS:** A retrospective cohort study design was used to determine the ADE costs of GPO-vir® S and GPO-vir® Z based on provider's perspective. Direct medical costs (i.e., drug, laboratory, hospitalization, administration etc.) were directly collected from patient profiles from March 2005 to May 2008 at Nakornping hospital, Chiangmai province, Thailand. Total cost and average cost per ADE were calculated. **RESULTS:** A total of 136 patients were studied. Of those, 95 cases received GPO-vir® S and 41 cases received GPO-vir® Z. Total ADEs found were 57 and 14 in GPO-vir® S and GPO-vir® Z groups respectively. Lipodystrophy (52.6%) was mostly found in GPO-vir® S group while anemia (28.7%) was found in GPO-vir® Z group. The total cost was 923,971 baht and 65,594 baht in GPO-vir® S and GPO-vir® Z respectively. An average cost per event in GPO-vir® S group was 16,210 baht and GPO-vir® Z group was 4686 baht. **CONCLUSIONS:** Although treatment with GPO-vir®Z seems to present lower costs of ADEs, selection of drug regimen still need to depend on the symptoms of individual patient.

PIN12

COST-OF-ILLNESS OF CHRONIC HEPATITIS B INFECTION IN VIETNAM

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OBJECTIVES: To quantify the financial burden of chronic hepatitis B (CHB) infection and its complications in a cost-of-illness study in Vietnam, a highly endemic country of hepatitis B virus (HBV) infection. **METHODS:** The study adopted the micro-costing approach. For direct medical cost estimation, data were retrieved retrospectively from medical histories of inpatients and outpatients with various CHB infection stages in 2008 from a large referral hospital in Vietnam. For direct nonmedical and indirect cost estimation, data were obtained from outpatients from the same hospital through face-to-face interviews. One- and two-way analyses were performed on the cost calculated. **RESULTS:** In 2008, the total cost of CHB infection and its complications was estimated to be around US$ 10 billion, with 80% contributable to direct medical cost. Antivirals were the major cost driver in treating CHB infections. The per-patient total annual direct medical cost increased with the severity of the disease with the cost amounted to US$ 943.64 for CHB and US$ 3916.21 for hepatocellular carcinoma. Based on the results, if all Vietnamese patients received treatment for CHB infections, the estimated cost would be twice as much as the total health budget of Vietnam, highlighting that a significant proportion of CHB infections in Vietnam are not being treated, and the patients are bearing the extra cost out-of-pocket, or seeking treatment from traditional medicines. **CONCLUSIONS:** This study confirms that chronic HBV infection poses an unbearable financial burden for the average patient with a GDP per capita of around $1024, and the lack of access to treatment is a social issue in Vietnam. Although universal newborns vaccination against HBV has been implemented to reduce the number of infected subjects, more health-care investment to improve access and provision of affordable medications by re-examining pharmaceutical policies to attain equity in proper treatment for patients with CHB infections would be needed.

PIN13

BURDEN AND MEDICAL COSTS OF ANOGENITAL WARTS IN BANGKOK, THAILAND

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OBJECTIVES: 1) Assess the proportion of anogenital warts to the total number of Sexual Transmitted Infection (STI); and 2) Quantify the direct medical costs of anogenital warts from patient perspective. **METHODS:** A prospective observational study was conducted in STI Clinic at Bangrak Hospital, Bangkok, Thailand from June 2008–September 2009. The proportion of anogenital warts to the total number of STI was calculated from the database of Bangrak Hospital. A total of 131 patients with clinically diagnosed anogenital warts were recruited. After baseline assessment, the patients had three additional follow-up-visits at day 7, month 1, and month 3. On each visit, patients were examined and interviewed for health-care costs, work productivity loss and activities impairment. At month 6, telephone assessment for the signs of disease recurrence was done. Patients were treated according to standard medical practice. **RESULTS:** The proportion of anogenital warts to the total number of STI in 2008 was 14.6%. The mean age (SD) of the study subjects was 28.2 years (7.4 years). Males and females were approximately equal (males 51.9%, female 48.1%). Most of them were employed (51.1%), the rest were sex workers (25.2%),