population in Italy. Reducing unnecessary antibiotic use in children has become a public health priority in our country. In order to limit the risk of emerging resistant bacteria and contain costs, it is urgent to educate paediatricians in the rational use of antibiotics.

MoO45 Measuring the quality of an outpatient and home intravenous antibiotic therapy (OHPAT) programme: Use of an International Registry

D. Nathwani, J. Morrison, G. Barlow, A. Tice
Infection & Immunodeficiency Unit, Tayside University Hospitals Trust, Dundee, United Kingdom; Tachoma, USA

Objectives: 1) To describe a method for continuos quality measurement of a clinical programme providing a regional OHPAT service. This system which has now been operational for more than 20 months. The integrated care pathway (ICP) used on all patients incorporates a number of key measures of quality-patient clinical outcome and satisfaction, laboratory (microbiology) outcome and economic outcome. Some of the generic data are currently being incorporated into an International OPAT Registry which aims 2) to provide an international database for determining the most clinically and cost-effective regimens based on measurable outcome data and, provide benchmark outcomes for providers.
Results: Number of patients treated: 183; Principle diagnosis: Skin& soft tissue infections 51.5%, bone and joint infections 22.8%, Endocarditis; others. Home (self administered) v Outpatient (nurse administered): 40% v 57%. *Clinical outcome:* Cure/improving 94%, No Change 2%, Worse 4%. *Microbiological Outcome:* 20% Culture positive-one patient had persisting organism post-therapy. *Drug related adverse reactions:* 6%, *Unscheduled hospital readmission:* 7.5%; *Economic outcome:* 2300 inpatient bed days saved; additional cost of drugs < £12/day. *Patient satisfaction:* High (specific data will be presented). Collection of such outcome measures locally and internationally should be an integral part of an OHPAT quality assurance programme and the International Registry will allow benchmarking and comparisons of effectiveness.

MoO46 Resource use and cost of care for patients hospitalized with Community Acquired Pneumonia (CAP)

W. Russell, R. Segal, F. Wang, D. Yin, T. Johns, J. Orrick
University of Florida, Pharmacy Health Care Administration, Gainesville Florida 32610, United States

Objective: To examine inpatient resource use and cost of care for patients with CAP in real-world practice settings.
Methods: A multicenter observational study was conducted in Florida between July 1997 and October 1999. Hospitalized adult patients (> =18 years) started on antimicrobial therapy for suspected or confirmed community-acquired pneumonia were enrolled in the study. Exclusion criteria were immunosuppression, cystic fibrosis and hospitalization in prior 2 weeks. Information on patient demographic characteristics, risk class, resource use, economic data and outcome measures were collected.
Results: 69 patients were enrolled in the study. Average age was 62.8 ± 17.2 (range 23–92); 58.9% were female. The number (%) of patients in risk classes I–V according to Fine *et al.* (NEJM 1997) were 9 (13%), 24 (34.8%), 19 (27.5%), 14 (20.3%) and 3 (4.3%) respectively. Average time from ER admission to 1st dose of antibiotic was 7.5 hours. Most frequently prescribed antibiotics included azithromycin (29.9%), ceftriaxone (16.8%) and levofloxacin (16.4%). 40 patients received a beta-lactam/macrolide or macrolide/quinolone. Average length of antibiotic therapy was 5.6 ± 3.2 days. Average hospitalization cost excluding physician cost was $4,024, with hospital room/board accounting for the largest percentage (85%), followed by laboratory (8%), drugs (4%), radiology (2%) and respiratory (1%). 66% of patients received antimicrobial therapy consistent with Bartlett and Mundy guideline (NEJM 1995) and these patients incurred lower costs ($3,363/patient) compared to patients receiving therapy inconsistent with guideline ($4,986/patient).
Conclusion: Understanding the processes of care in real-world practice settings is important for improving the quality and cost-effectiveness of care for hospital patients with CAP.

P:11 – Pharmacoeconomics

MoP230 Use and cost of antibiotics in a long term care facility versus community teaching hospital in Northern Israel

V. Rozenfeld, J. Ben Israel, R. Raz[1]
Shoham Geriatric Center, Pardes Hanna; [1]Haemek Medical Center, Afula, Israel

Objectives: To evaluate the use and cost of antibiotics in a Long Term Care Facility (LTCF) with 970 beds and to compare them with a Community Teaching Hospital (CTH) with ~440 beds.
Methods: A three-point prevalence survey was performed between 7/97–6/98 in both hospitals in order to evaluate the number of pts receiving antibiotics. The use of antibiotics was evaluated by the Defined Daily Dose (DDD) 1,000 hospitalization days (hd) and the cost in US $/1,000 hd.
Results: 5.9% of the LTCF inhabitants and 24.7% of the CTH in pts received antibiotics during the three-point prevalence survey. In the LTCF 29% of the total antibiotics prescribed were administered intravenously in contrast to 53% in the CTH. The total DDD/1,000 hd in the LTCF was 87.4 and in the CTH 661, with the cost of the antibiotics being 257 US$/1,000 hd in the LTCF and 4436 US$/1,000 hd in the CTH.
Conclusions: The use and cost of antibiotics in a CTH is considered higher than in a LTCF. Even though this was the expected conclusion, this is the first study to compare antibiotic "consumption" between a CTH and a LTCF.

MoP231 AdHOC: Advisory group on home-based and outpatient care. Results of a survey of OHPAT practice in the EU and beyond

D. Nathwani[1], J. -J. Zambrowski[2], I. Harding[3]
[1]Tayside University Hospital Trust, Dundee, United Kingdom; [2]Hopital Bichat, Paris, France; [3]Micron Research, Cambs, United Kingdom

Objectives: An advisory group has been formed to facilitate and promote home-based and outpatient care, comprising members from EU and other non-US countries. We report the results of a survey of outpatient and home parenteral antibiotic therapy (OH PAT) amongst members of the group.
Methods: Members completed a questionnaire on perceptions and actual OHPAT practice in their countries.
Results: Group members from 13 countries participated, 6 of whom (46%) already run an OHPAT service. OHPAT was both hospital and community-based in 10 (77%) countries. The medical specialties most involved were infectious diseases (all countries), haematology, general practice and orthopaedics. Use of OHPAT was widespread in some countries (eg. Italy) but less well accepted in others, mostly because of financial constraints. Formal survey data of OHPAT use exist in only 4 countries of the 13 reported here (Netherlands, UK, Italy, Brazil). OHPAT services were controlled mostly by individuals or institutions, rather than by government or reimbursement/insurance agencies. All participants considered that OHPAT would increase during the next five years, given changes in funding or reimbursement systems. The main barriers to acceptance were: lack of organisation, lack of clinical trial data and funding issues.
Conclusions: OHPAT is widespread outside the USA, but barriers exist to its acceptance and expansion elsewhere. In our current cost-conscious healthcare environment, it is important to find new ways of delivering care which are cost-effective and improve quality of life for patients and carers. The group aims to provide a forum for developing generic and local guidance for OHPAT and hopes to collaborate with the ENIS Group with a view to promoting OHPAT in Europe and beyond.

MoP232 Pharmacoeconomic evaluation of antibiotics in acute sinusitis in adults

O. Karpov, A. Zaytsev, YU. Ignatov
Institute of Pharmacology, Saint-Petersburg, Russian Federation

Objectives: A number of antimicrobial agents are effective in the treatment of acute sinusitis. Economic evaluation is necessary for best practice recommendations.
Methods: The economic outcomes of azithromycin (AZ), midecamycin (MC), co-amoxiclav (CA) and cefadroxil (CF) treatment were studied in randomised investigation among 160 adults with confirmation of acute sinusitis. 50 patients received AZ at 500 mg once a day during 3 days, 30 -

MC at 400 mg tid, 50 - CA at 625 mg tid, and 30 - CF at 500 mg bid during 10 days. The direct (the hospitalisation outlay and antibiotics' course price) and additional costs (cost after the change of antimicrobial in case of initial treatment failure) were calculated.
Results: The cure rates were: for AZ and CA - 94%, for MC - 90% and for CF - 83%. The direct cost was least at AZ group ($70.3 per patient) and biggest - in CA group ($105.9). It was $94.8 and $98.8 in CF and MC groups accordingly. The total (direct and additional) cost was $70.6 (AZ), $106.6 (CA), $98.1 (CF), $102.2 (MC) per patient. Cost-effectiveness ratio for AZ was the most attractive among others antibiotics and it was 0.74 ($p < 0.01$). Same indexes for CA, CF and MC were 1.11; 1.14 and 1.09 accordingly.
Conclusions: Azithromycin has the better economic outcomes in comparison with co-amoxiclav, cefadroxil and midecamycin that may be used for determination of acute sinusitis treatment regimen.

MoP233 Costs avoided by using a safety device for subcutaneous injections of Low Molecular Weight Heparin (LMWH)

I. Durand-Zaleski[1], S. Gabriel[2], J. Dinet[2], A. Tarantola[3], E. Bouvet[4]
[1]*Hopital Henri Mondor, Creteil;* [2]*Health Economics Sanofi-Synthelabo, Bagneux;* [3]*GERES, Faculte Bichat, Paris;* [4]*Hopital Bichat, Paris, France*

Objective: Subcutaneous injections account for an increasing share of total needlestick injuries. The objective was to document the possible cost-savings related to the introduction of a protected needle (safety shaft) used to administer LMWH.
Methods: we estimated the frequency of needlestick injuries attributable to treatment with LMWH from both published and CCLIN data and modeled a countrywide estimate. The total societal cost of managing a needlestick injury was assessed assuming that all the recommended procedures were followed. This theoritical cost was put in perspective with observed data (GERES study on post-exposure prophylaxis in 1998).
Results: The total calculated societal cost of testing the source patient and healthcare worker, of prophylactics and workdays lost was assessed to be superior to $2,000. However, the large discrepancy between recommended and actual practice led to significant reductions in costs, mostly linked to the absence of sick-leaves and systematic prophylaxis.
Conclusion: The use of a safer device for LMWH injections may result in cost-savings by avoiding the costs of needlestick injuries management. Although the costs avoided were shown to be lower in reality than in theory, our approach was conservative as the costs related to the risk of viral infection were not included. In addition, the medical benefits of reducing exposure to blood should be added to the potential costs-savings.

MoP234 Comorbidity and cost of care in HIV+ patients (pts.) 1996–1999

M. K. Rawlings[1], R. Slaker[2], E. Hamel[2], D. Lapins[2]
[1]*Parkland Health & Hospital System, Dalas, TX;* [2]*Clinical Partners, San Francisco, CA, United States*

Objective: To determine trends in no. of comorbidities and cost of care in HIV + pts. between 1996 and 1999.
Methods: Paid insurance claims for 1,389 pts. were analyzed for diagnosis, drug, and procedure codes indicating 17 key comorbidities (treatment (tx) w/antidepressants, tx w/antipsychotics, cardiac or rhythmia, cervical dysplasia, diabetes, heart failure, hepatitis, herpes, hyperlipidemia, hypertension, ischemic heart disease, kidney stones, lipodystrophy, necrosis, non-PCP pneumonia, pregnancy, chronic respiratory disease, tuberculosis). Average cost of care per pt. per month (PPPM) was determined for 1996 and 1999.
Results: Average no. of comorbidities per pt. Increased from 0.99 to 1.46, while cost of care decreased from $1329 to $1174 from 1996 to 1999. Increases in drug costs (bath ART and non-ART) have been offset by large decreases in non-drug costs, including a 58% reduction in hospital and 73% reduction in home healthcare (HHC). Average cost in all categories increases as no. of comorbidities increases (see table).

Table 1. Average cost PPPM (1996/1999)

No. comorbidities	0	1–3	4+	Population average
N	361/239	446/578	31/68	838/885
Non-ART drug	$20/$108	$122/$200	$315/$648	$85/$144
ART drug	$55/$457	$207/$601	$259/$803	$143/$579
Hosp	$50/$17	$248/$81	$1282/$510	$200/$85
HHC	$94/$45	$270/$85	$1121/$87	$224/$61
Other	$580/$83	$670/$204	$1892/$717	$677/$306
Total	$800/$710	$1516/$1172	$4869/$2765	$1329/$1174

Conclusions: Since 1996 substantial decreases in HIV-related mortality have occurred. As pts. live longer with HIV, comorbidities have increased, but total cost of care has declined. Additional longitudinal studies are needed to confirm these results.

MoP235 Increasing costs of HIV care associated with successive losses of viral suppression

J. Stansell[1], J. Barrett[2], C. de Guzman[2], C. Holtzer[3], D. Lapins[2]
[1]*Positive Health Program, San Francisco General Hospital, San Francisco, CA;* [2]*Clinical Partners, San Francisco, CA, United States;* [3]*Visible Genetics, Paris, France*

Objective: To determine costs of HIV care associated with each loss of viral suppression, defined as viral load (VL) < 400 copies/mL.
Methods: We evaluated an 811-patient, longitudinal database containing clinical and cost data (hospitalization, pharmacy, laboratory, skilled nursing facilities, home health, professional fees and infusion costs) from 1/1/96 to 6/30/99. Patient population was insured, 95% mate and seen by private practitioners. Costs were calculated by month, stratified by VL and by number of therapeutic failures (defined as 2 successive VL > 1000 copies/ml, ≥2 weeks apart). Patients were followed longitudinally. Statistical significance measured by Student's t-test (defined by $p < 0.05$).
Results

Antiretroviral (ARV) failure category	Total PPPM	Hospital PPPM	Drug PPPM
No ARV failure (n = 269)	$1206	$48	$883
ARV failure = 1 (n = 572)	$1448	$192	$889
ARV failure > 1 (n = 98)	$1779	$224	$1190

Failure category	ARV failure = 1 PPPM cost	Hospital cost	Drug cost
No ARV failure	$p = 0.05$	$p < 0.05$	—
ARV failure > 1	$p = 0.014$	$p < 0.05$	$p < 0.05$

Conclusions: Despite successful salvage therapy, total PPPMs significantly increased as the number of therapeutic failures increased ($p < 0.0001$). Analysis of costs that comprise the total cost of core reveals drug costs account for the majority of cost increases for patients who failed initial HAAS. Costs of HIV care are minimized by the maintenance of undetectable viral load.

MoP236 Use of Highly Active Antiretroviral Therapy (HAART) among 483 patients in Italy

D. Yin[1], F. Tediosi[2],DiCintio[2], F. Parazzini[2], L. Garattini[2]
[1]*Merck & Co., Inc. Whitehouse Station, United States;* [2]*Mario Negri Institute for Pharmaceutical ResearchItaly*

Objective: HAART that includes at least one protease inhibitor in combination with reverse transcriptase inhibitors has become the most important strategy for treating HIV infection. The objective of this study is to describe patterns of HAART use among 483 Italian patients.
Methods: A multicenter, prospective observational study was conducted in five Italian hospitals between June 1997 and June 1998. Patients were stratified by CD4 cell count and AIDS status and were followed prospectively for one year. Data were collected every three months by predesigned questionnaire. Information collected included patient characteristics, CD4 cell count, viral load, opportunistic illnesses, healthcare resource utilization, and employment status.

Results: 483 patients were enrolled in the study. The percentage of patients receiving HAART increased from 37.1% to 56.6% among patients with CD4 cell count between 200 and 500 copies/mm^3 and 15.3% to 31.5% among patients with CD4 > 500 copies/mm^3. Among patients with AIDS defining illness (ADI) and CD4 cell count less than 200 copies/mm^3 at enrolment, the percentage of patients receiving HAART remained stable.

Patient disease stage at enrolment	% Patients treated with HAART at any time during period			
	0–3 months	4–6 months	7–9 months	10–12 months
Patients with AIDS defining illness (ADI); n = 122	88.5%	82.8%	85.3%	82.0%
CD4 < 200 copies/mm3, no ADI; n = 114	68.4	71.9	62.3	64.0
CD4: 200–500 copies/mm3; n = 123	37.1	51.6	53.2	56.5
CD4 > 500 copies/mm3, n = 124	15.3	21.8	28.2	31.5

Conclusions: HAART could be considered under-utilised among patients without AIDS defining illness in Italy between June 1997 and June 1998.

MoP237 Patients on Highly Active Antiretroviral Therapy (HAART) are more likely to remain employed in Italy

D. Yin[1], F. Tediosi[2],DiCintio[2], F. Parazzini[2], L. Garattini[2]
[1]*Merck & Co., Inc. Whitehouse Station, United States;* [2]*Mario Negri Institute for Pharmaceutical ResearchItaly*

Objective: To estimate the association between HAART and employment status among HIV-positive patients.
Methods: A multicenter, prospective observational study was conducted in five hospitals located in three different regions of Italy (1 from the South, 2 from Centre, 2 from the North) between June 1997 and June 1998. A total of 483 patients were stratified by CD4 cell count and AIDS status and ware followed prospectively for one year. Data were collected every three months by predesigned questionnaire. Information collected included patient characteristics, CD4 cell count, viral load, opportunistic illnesses, healthcare resource utilization, and employment status.
Results: At enrolment 241 of the 483 patients (50%) were an employee, self-employed, or a temporary worker. Patients who received HAART were more likely to remain employed during the one-year follow-up period (see table). Multivariate logistic regression indicated that the likelihood of remaining employed was associated with HAART (Odds Ratio = 2.9, p = 0.0001), status of AIDS defining illness (OR = 0.36, p = 0.0001) or CD4 < 200 cells/mm^3 at enrolment (OR = 0.43, p = 0.0002).

	% of patients remain employed	
	Patients on HAART	Patients not on HAART
0–3 months	81.1% (133/164)	76.6% (59/77)
4–6 months	79.9 (131/164)	66.2 (51/77)
7–9 months	79.9 (131/164)	63.6 (49/77)
9–12 months	76.8 (126/164)	61.0 (47/77)

Conclusions: Employed HIV-positive patients who received HAART were 2.9 times more likely to remain employed than patients receiving non-HAART therapy or no antiretroviral therapy.

MoP238 Cost outcomes for HIV-associated wasting: Initial treatment with somatropin vs. initial treatment with other wasting treatments

V. Cafaro[1], C. de Guzman[2], D. Gary[2], E. Hamel[2], R. Slaker[2], M. Lange[2], D. Lapins[2]
[1]*Wellspring Medical Group, San Francisco, CA;* [2]*Clinical Partners, San Francisco, CA, United States*

Objective: To analyze cost outcomes for patients receiving somatropin, stratified by prior treatment for AIDS-related wasting.
Methods: Clinical Partners (CP) is a national disease management company providing data support and HIV case management for managed core organizations. The CP database contains clinical data from chart audits and electronic claims data. In an analysis of patients with AIDS-related wasting, 38 patients began somatropin treatment between 1/1/1997 and 6/30/1999. 18 patients received treatment for wasting using some combination of testosterone, oxandrolone, and/or dronabinol prior to their treatment with somatropin. Patients were stratified into "First-line somatropin" and "First-line Other Wasting Treatment (OWT)" groups, and analyzed for cost outcomes in an intent-to-treat analysis. All patients had evidence of wasting syndrome (defined as loss of ≥10% of body weight) by an HIV dietitian; all were on stable antiretroviral therapy. CD4+ counts and viral suppression rates before wasting treatment were comparable between the groups.
Results: While average PPPM costs between the groups were similar prior to wasting treatment, differences were evident during end after treatment with somatropin. For patients in the First-line somatropin group, average cost PPPM declined 27% ($1,859 to $1,356) following somatropin treatment, while costs rose 187% ($1,770 to $5,080) in the First-line OWT group.
Conclusions: In this cohort, patients initially treated with somatropin had better cost outcomes than patients who initially received other wasting treatment. Before firm conclusions can be drawn, a prospective trial evaluating initial somatropin use vs. somatropin as secondary and cost outcomes treatment should be initiated.

Topic 12 – Emerging infections

P:12/1 – Emerging infections - I

WeP260 First description of the human granulocytic ehrlichiosis in Croatia

LJ. Misic-Majerus[1], N. Bujic[1], V. Madjaric[1], V. Janes-Poje[1]
[1]*Department of Infectious Diseases; General Hospital, Koprivnica, Croatia*

Objective: To present epidemiological, clinical, laboratory characteristics and diagnostic analysis of patients suffering from Human granulocytic ehrlichiosis (HGE).
Methods: First patients affected with HGE, who have been hospitalised at the Department of Infectious Diseases of the General Hospital in Koprivnica-Croatia, during the 1998, were included in the analysis. Three man and one woman aged from 17–67 were infected. The clinical picture, laboratory findings and course of disease have been described in details. Specific antimicrobial therapy was not administrated. Serological methods of indirect immunofluorescence assay (IFA) were used for diagnostic confirmation.
Results: HGE was self-contained disease in two patients. Clinically, it was presented as non-specific, flu-like acute, febrile illnes with leukopenia, trombocytopenia and moderately elevated aminotransferase values. In two patients it was a coinfection. In one patient HGE was associated with Tick-borne encephalitis (TBE) and in the another with Lyme disease (LB). Testing sera for antibodies for Ehrlichia equi and HGE causative pathogen showed a quadruple increase in the acute and covalescent phase of the disease.
Conclusion: This study presents first proven patients with HGE in Croatia.

WeP261 Sensitive PCR method to detect *Babesia divergens*

L. V. von Stedingk[1], M. Gurtelschmid[1], M. Granström[1], J. Gray[2]
[1]*Clin. Microbiol. Karol. Hosp. Stockholm, Sweden;* [2]*Univ. College Dublin, United Kingdom*

Objectives: Babesiosis, primarily known to afflict wild and domestic animals is being increasingly recognized as a human disease both in Europe and in the United States. The intra-erythrocytic parasite Babesia divergens is the predominant etiologic species in Europe and is transmitted by the tick Ixodes ricinus. The aim of the study was to create a sensitive and specific PCR method to detect B. divergens parasites in ticks and whole blood samples.