were extracted and summarized. RESULTS: The study identified 16 adverse events associated with blood transfusions in which incidence rates were reported in the literature for the time period of 2000 to 2007. Of those, the adverse events with the highest associated mortality rate were: 1) acute haemolytic transfusion reactions due to non-ABO compatibility (between 2.11%–7.06%); 2) transfusion-related acute lung injuries (TRALI) (10% approx); and 3) bacterial sepsis (between 17%–22%). Reported as incidence rates, the most frequently reported adverse event was febrile reaction (0.9/1000 by transfusion units) and mild allergic reaction (1/50–1/100 by transfusion units). CONCLUSION: In spite of today’s safety and quality controls measures for blood transfusions, a considerable risk of adverse events is still associated with them. Therefore, alternatives to blood transfusions should be considered when possible.

HEMATOLOGICAL DISORDERS—Cost Studies

PHM2

BUDGET IMPACT (BI) OF PARENTERAL IRON TREATMENT OF IRON DEFICIENCY ANAEMIA (IDA) IN SWITZERLAND
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OBJECTIVES: IDA, the most common form of anaemia, has a relatively high prevalence across Europe. IDA is common in pregnancy, postpartum and inflammatory bowel disease (IBD) with IDA prevalences of 18, 17 and 33% respectively. At present, treatment with parenteral iron substitution is limited by the amount of iron which can be administered intravenously in any one application. This study estimates the BI associated with partially substituting the standard i.v. treatment, iron sucrose, with a new treatment, ferric carboxymaltose, allowing for the application of higher dosages in a shorter time. The study adopted the perspective of the Swiss mandatory health insurance over 3 years covering the indications pregnancy, postpartum and IBD. METHODS: Resource use was based on primary data and guidelines. Costs were estimated using a fee-for-service reimbursement system (Tarmed), including drug, personnel and other costs. The price of ferric carboxymaltose was assumed to be that of iron sucrose, with a new treatment, ferric carboxymaltose, allowing for the application of higher dosages in a shorter time. The study adopted the perspective of the Swiss mandatory health insurance over 3 years covering the indications pregnancy, postpartum and IBD. METHODS: Resource use was based on primary data and guidelines. Costs were estimated using a fee-for-service reimbursement system (Tarmed), including drug, personnel and other costs. The price of ferric carboxymaltose was assumed to be that of iron sucrose +40%. The BI was estimated for the first 3 years post-launch, using a substitution rate of 20% in year 1 and 50% in year 2 and 3. RESULTS: Ferric carboxymaltose reduces the costs per treatment cycle and patient in IBD by 35% compared to iron sucrose (CHF 475 vs. CHF 732), due to reduced personnel costs: 1000 mg iron requires one application with ferric carboxymaltose and 5 for iron sucrose (200 mg each). Total savings to the Swiss mandatory health insurance amount to approx. CHF 1 Mio (approx. € 611’600) in year 1 and approx. CHF 2.5 Mio in year 2 and 3 each. Costs were also reduced by 33% in the gynaecological indication using smaller, empirical dosages of 500 mg. CONCLUSION: Treating IDA involves substantial costs to the Swiss mandatory health insurance. Substitution of iron sucrose by ferric carboxymaltose may help to reduce these due to saved personnel costs, despite higher product costs.

PHM3

CLINICO-ECONOMICAL ANALYSIS OF BORTEZOMIB VS DEXAMETHASONE IN RECURRENT OR TREATMENT-RESISTANT MULTIPLE MYELOMA IN RUSSIA
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OBJECTIVES: To analyze cost-effectiveness of bortezomib versus dexamethasone for recurrent or treatment-resistant multiple myeloma in Russian health care system. METHODS: The study was performed from the Russian reimbursement system point of view. An economic model prepared for the submission to National Institute of Health and Clinical Excellence was used as a framework. Effect of studied drugs was measured in life-years gained. The effectiveness was estimated on the basis of APEX study results and complemented with prognosis of long-term outcomes. Direct medical costs for medication were included into the model, registered prices were taken from the Russian reimbursement list while dose regimen and number of treatment courses were considered to be equal to those used in APEX study. The incremental cost-effectiveness ratio (CER) was calculated. RESULTS: The incremental effectiveness of bortezomib versus dexamethasone was estimated as 2,371–2,739 life-years gained (the interval includes minimal and maximal values identified by different approaches to long-term outcomes projection). The incremental cost was 1 822 774,00 rubles (about 70 thousands USD). The incremental CER was 67,510,148 — 792,510,43 rubles (25–29 thousands USD) per life-year gained. CONCLUSION: The incremental CER for bortezomib is comparable with other expensive drugs included into the reimbursement system. Further studies are needed to assess cost-effectiveness of bortezomib vs other therapeutic strategies used for resistant and recurrent multiple myeloma and to evaluate effectiveness in medical practice.

PHM4

CLINICO-ECONOMICAL ANALYSIS OF FERRUM LEK VS FENULS IN IRON-DEFICIENT ANEMIA IN ELDERLY PATIENTS
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OBJECTIVES: To analyze cost-effectiveness of Ferrum Lek (Ferrum III) versus Fenuls (Ferrum II) for iron-deficient anemia in elderly patients with gastrointestinal comorbidity in Russian health care system. METHODS: Randomized multi-center study of 132 ambulatory patients (60–86 years old, mean age 69.11 ± 6.39; 102 (77.27%) were females). Criteria for anemia was decreasing of hemoglobin (Hb) level below 110 g/L. Sixty-six patients received either Ferrum Lek (200 mg daily) or Fenuls (200 mg daily). Duration of treatment was 6 weeks. Criteria of effectiveness were: normalization of Hb level; increasing levels of Hb and Fe in plasma; adverse effects at day 42 after start of treatment. The cost-effectiveness ratio (CER) was calculated (cost of 1 g/L Hb increasing). RESULTS: At follow-up Hb level increases in Ferrum Lek group was 30.1 g/L (12.3–88.4) and 19.8 g/L (4–39) in Fenuls group. Normalization of Hb level (110 g/L) was achieved in 62 (93.94%) patients in Ferrum Lek group and in 53 (80.3%) patients in Fenuls group. Targeted Hb level (120 g/L) was achieved in 54 (81.82%) patients in Ferrum Lek group and in 36 (54.55%) patients in Fenuls group. Dropouts due to adverse effects were: 1 patient in Ferrum Lek group and 9 patients in group. Gastrointestinal adverse effects occurred significantly more often in Fenuls group than in Ferrum Lek group (constipation in 21.2% and 1.5% patients, gastric complaints in 28.8% and 6% respectively). The cost per achieving
Abstracts

PHM5

ADVATE IS COST-EFFECTIVE INVESTMENT IN HEMOPHILIA A TREATMENT WHEN PATHOGENS Emerge—A SCENARIO-BASED ECONOMIC AND POSITIVE INVESTMENT INTERVAL (PII) EVALUATION

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OBJECTIVES: To evaluate the cost-effectiveness and Positive Investment Interval (PII) of ADVATE [Antithrombophilic Factor (Recombinant), Plasma/Albumin-Free Method, PFM] as an on-demand/prophylactic modality for hemophilia A (HA) treatment compared to the best current Finnish treatment practice (Kogenate) in a scenario where a pathogen emerges and is transmitted through non-PFM methods as the Hepatitis C virus (HCV) in the 1980’s. METHODS: Incremental cost-effectiveness analysis was performed using probabilistic simulation to depict uncertainty. Conservative information related to treatment practices, costs and survival in Finland were gathered from literature and clinical experts. HIV and HBV were excluded from the modeling, because only 2 HIVs have been transmitted through coagulant products to Finnish HA patients and efficient vaccinations against HBV infection exists. Our innovation, PII, is discussed elsewhere. Here, PII was used to assess the interval when the extra treatment costs of ADVATE are compensated by the treatment costs of emerging pathogen (i.e interval when no pathogens should emerge, if non-PFM method is used). RESULTS: Current treatment practice was dominated by the ADVATE scenario. 18 years old HA male with and without pathogen transmission had survival estimates of 48 and 55 years, respectively. The expected difference in survival was 3.48 years (51% less pathogen transmissions). Mean treatment cost differences were 7,500–50,200 €/year and 213,700–2,381,600 €/lifetime favoring ADVATE. All PII for annual ADVATE investment favored ADVATE and were 1–7 years depending on patient’s weight, age, and treatment modality. When production losses and discounting of costs and effectiveness (5%) were included in sensitivity analysis, the relative differences increased (e.g. PII became 1–9 years due to production losses). CONCLUSION: ADVATE improves survival, is cost-effective and offers good long-term investment in the treatment of hemophilia A, when known/unknown pathogens transmitted through non-PFM methods emerge. When investment’s safety is of concern, PII offers new hands-on interpretation for the political discussion.

PHM6

COST-EFFECTIVENESS OF INTRAVENOUS IRON VERSUS ORAL IRON IN ANEMIA TREATMENT IN ONCOLOGY, CHRONIC KIDNEY DISEASE AND POST-PARTUM PATIENTS

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OBJECTIVES: To conduct a cost per QALY analysis of intravenous versus oral administration of iron, in anemia in Oncology, Chronic Kidney Disease (CKD) and Post-partum patients. METHODS: Intravenous iron supplementation has been shown to improve Hb response to EPO treatment, and to decrease EPO dosage requirements in patients with chronic anemia. Intravenous iron is more costly but also more effective than oral iron in treatment of anemia. A Markov model was developed for estimating incremental costs and QALYs in Oncology and CKD patients. Incremental costs were estimated for iron therapy, Erythropoietin (EPO) administration, Blood transfusion, and outpatient visits. QALY gains were estimated by linking Hb levels to QALY weights. A piggy-back approach was used for estimating costs and QALYs in anemia treatment in Post-Partum patients. Swedish prices and data representing Swedish treatment patterns and patient characteristics are derived from national databases and publications. RESULTS: In CKD patients, the cost of intravenous iron is offset by cost savings for EPO. Intravenous iron successfully corrects the anemia quicker than oral iron, resulting in a gain of 0.065 QALYs. In Oncology, the cost of IV iron is also offset by savings in EPO costs. Intravenous iron corrects the anemia quicker than oral iron and reaches a higher Hb level, with a resulting gain of 0.0759 QALYs. In post-partum patients, Hb is more quickly corrected with intravenous iron, leading to a QALY gain of 0.0086 during a six week time frame. The incremental cost for intravenous iron is 700 SEK, with a resulting cost of 68,000 SEK per QALY gained. CONCLUSION: Intravenous iron is a cost-effective alternative to oral iron, in treatment of iron deficiency anemia in oncology, CKD and post-partum patients.

PHM7

COST SIMULATION OF NOVOSEVEN VERSUS FEIBA AND ITT-F8 FOR PRIMARY PROPHYLAXIS TREATMENT OF HAEMOPHILIA A/B PATIENTS WITH INHIBITORS

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OBJECTIVES: Haemophilia patients with inhibitors characteristically have high annual drug costs and other health care related costs. There are essentially three treatment options: NovoSeven, FEIBA or ITT followed by regular F8 treatment. Aim: This cost-minimization simulation examines the treatment costs of NovoSeven versus FEIBA and ITT/F8 for haemophilia A/B patients with inhibitors. METHODS: The simulation is based on a standard set of assumptions for an average severe haemophilia patient. First, primary prophylaxis treatment is defined by daily treatment on an annual basis of 50 iG/KG for NovoSeven and 40 IU/KG for FEIBA. ITT-F8 treatment follows the Bonn Protocol for ITT at 300 IU/KG followed by F8 at 15 IU/KG. Second, we assume 2 breakthrough bleeds per month. Third, the patients weight changes each year throughout a 21 year child-adolescent-manhood life cycle time series model according to average yearly weight changes for boys in the standard population. Fourth, costs are based on estimated average global realised wholesaler purchaser prices in EUROS. ITT-F8 costs 0.7271 EUROS for an IU/KG. FEIBA costs 1.143216 EUROS for an IU/KG. NovoSeven costs 0.9191 EUROS for an iG/KG. Costs are also discounted at a rate of 3.5 percent a year over time. RESULTS: Annual N7 costs for a 70 KG patient are 990.662 EUROS per year. Annual FEIBA costs for a 70 KG patient are 1.168.367 EUROS per year. Annual ITT treatment is 11.146.504 EUROS and annual F8 treatment costs are 277.669 EUROS. CONCLUSION: Novo Seven is slightly cheaper compared to FEIBA for certain dosing regimens. NovoSeven is also cheaper than ITT-F8 for the first 6–7 years after treatment begins.