Approaches for the economic evaluation of pharmaceutical care services

Report from Workshop 2
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Aim of the workshop

• To establish a framework for the economic evaluation of pharmaceutical care services and define best practices in the development of respective economic models
Introduction to Pharmacoeconomics

- Why do we need health economics
- Application of economic analyses
- Different perspectives (Society, payer, provider, patient)
- Costs (Direct medical costs, direct non-medical costs, indirect costs, intangible costs)
- Steps in economic evaluation
- Cost-minimization analysis, Cost-benefit analysis, Cost-effectiveness analysis, Cost-utility analysis
- Time horizon
- Trial based or modelling costs (decision-tree)
- Discounting
- Sensitivity analysis
Outcomes of PC-services and use in economic analyses

- Outcomes in health care
- ECHO-model
- Quality of life (SF-36, Euro-5D)
- Utility and Quality Adjusted Life Years
- Value and Willingness to pay
- Economic evaluation of the Danish Asthma TOM project
Development of two studies

• Disease-specific service
  – Obesity
  – One year study
  – 500 patients
  – Primary care – community pharmacy

• Generic service
  – Acute care patients
  – One year study
  – 100 patients
  – Hospital
Disease-specific Service

• RCT: patients recruited in pharmacy
  – Level of randomization: patients

• 3-month intervention
  – Shopping, Cooking classes, exercise and patient education: 6 sessions

• Target: diabetes patients with obesity
  – Identified in pharmacies based on prescriptions for antihyperglycemic agents and visual screening for obesity (BMI > 25 - 35kg/m²)

• 1-year follow-up to assess weight loss
Disease-specific Service

• Model-based economic evaluation
  – Adapted from orlistat study (published based on Swedish and British cost data)
    • Orlistat showed reduction in weight and HbA1c: Patients with >5% weight loss had average of 1.16% crude reduction in HbA1c
    • Incidence rates of micro- and macrovascular complications were obtained from UKPDS
    • Association between HbA1c and micro- and macrovascular complications was modelled based on UKPDS results
    • Association between onset of complication and decrease on QALY was obtained from various sources
Disease-specific Service

- Estimated cost savings based on estimated impact of cooking classes: 20% of patients in the intervention group and 2% in the control group achieve weight loss >5%
- Reduction in HbA1c results in ~2 saved AMI, 1 saved stroke, 0.65 QALYs
- 15,000 cost savings over 10 years follow-up
- Cost for the intervention was estimated at 30,000
- Net benefit: -15,000
- Cost-Benefit Ratio: 2:1
- ROI: -100%
- Cost-effectiveness ratio: 15,000 per 0.65 QALY or 23,000 per QALY
Generic Service

- All admissions to hospital general medicine unit were screened for readmissions the previous year
- Inclusion criteria: > 65 years, High risk patients (3 admissions within last 12 months)
- Exclusion criteria: Terminal ill, Parasuicidal
- 3 months enrolment period or until estimated number of patients
- Medication review during stay and discharge counselling. Follow-up after 1 month, 3 month and 12 months
Generic Service

• Trial based economic evaluation
  – 1-year follow-up via phone to obtain data on admission history
  – Before / After Study comparing readmission rates and total cost accrued from readmissions
  – Other cost caused by or saved with the intervention not considered
  – Patients lost to follow-up: cost imputed based on average cost in retained patients

• Assumptions
  – Readmission rate >65 years = 35% in 6 months
  – 5% of the admissions are preventable drug related admissions

• 800 bed hospital
  – 50 admissions per day, 3900 admissions in 3 month
  – 1300 readmissions first 6 months, 1750 readmissions during first year
Generic Service

• Outcome
  – 5% of the admissions are drug related = 195 admissions
  – Adjusted for exclusion criteria: Total 120 drug related admissions
  – 20% can be prevented by the discharge service = 25 admissions
Generic Service

• Investment Costs
  – Screening of the patients: 3 minutes x 50 patients/day
    = 2.5 hours
  – Medication review and Patient interview 5.5 hours
  – Total 8 hours per day x 75 Euro x 5 days x 13 weeks
    = 39,000 Euro

• Follow-up
  – Phone calls: 1-2 weeks, 6 months, 12 months: 15
    minutes x 120 patients x 3 times = 11,250 Euro

• Total costs = 50,250 Euro
Generic Service

• Cost savings
  – Cost of admission (2500 – 4500 Euro)
  – Prevented admission (2500 – 4500 Euro) x 25
    = 62,500 Euro – 112,500 Euro

• Net cost benefit = 12,500 – 61,250 Euro
Study Plan Evaluation

• Both proposals were reviewed based on ISPOR guidelines for the conduct of model-based / trial-based economic evaluations

• Various technical steps and quality checks need to be added

• Planning of economic design and a priori cost calculations were considered valuable in designing / selecting the intervention and study outcomes