

THE AVERAGE COSTS OF THE TREATMENT OF ASTHMA EXACERBATIONS IN IN-PATIENT CARE AND HOSPITAL EMERGENCY ROOM IN POLAND

Plisko R*, Weislo J*, Landa K*, Glogowski C*, Gierczynski JM*

*HTA Consulting, Poland
#GlaxoSmithKline Pharmaceutical S.A. Poland

OBJECTIVE

The objective of this analysis was to investigate direct cost of asthma exacerbations in Poland from the perspective of the payer and the service provider.

METHODS

To examine the current practice of asthma exacerbations treatment a survey in 4 hospitals was performed. The hospitals were chosen on the basis of different fixed cost class. In those hospitals data concerning the cost of asthma exacerbations treatment were collected. According to current practice severe asthma exacerbations were treated in-patiently and mild or moderate asthma exacerbations were treated in hospital emergency rooms (usual stay for one day).

The following costs were calculated for inpatient care (severe exacerbations):

- pharmaceuticals,
- hospital staying,
- personnel,
- diagnostic procedures.

An assumption that average hospital admission took 10 days was made. On the basis of collected data the pharmaceuticals utilization per 10 day hospital stay was assessed. For the purpose of this assessment the decision tree was formulated, the proportions expressing probabilities of patients receiving specific drug therapy, duration of drug therapy and route of the drug administration were calculated.

For asthma exacerbations treated in hospital emergency rooms similar cost groups were included. Sensitivity analysis was performed.

RESULTS

SEVERE ASTHMA EXACERBATIONS

| Drug | Percentage of patients taking particular drug during treatment of exacerbation | Cost per one patient | |
|---|--|----------------------|---------------|
| | | PLN | Euro |
| Short acting beta agonists | 100% | 10.36 | 2.64 |
| Inhaled steroids | 100% | 1.81 | 0.47 |
| Oral corticosteroids (prednisone and dexamethasone) | 100% | 3.26 | 0.84 |
| Long acting beta agonists | 80% | 20.11 | 5.08 |
| Short acting muscarinic antagonists | 100% | 15.55 | 3.98 |
| Systemic steroids | 85% | 40.57 | 10.36 |
| Antibiotics | 85% | 11.46 | 2.92 |
| Mucolytics | 80% | 1.08 | 0.28 |
| Anticholinergics | 85% | 128.21 | 32.86 |
| Diagnose Therapy | 80% | 162.20 | 41.40 |
| Disposable equipment and materials | 100% | 5.32 | 1.36 |
| TOTAL | | 435.31 | 109.83 |

MILD OR MODERATE ASTHMA EXACERBATIONS HOSPITAL EMERGENCY ROOM CARE

| Drug | Percentage of patients taking particular drug during treatment of exacerbation | Cost per one patient | |
|---|--|----------------------|-------------|
| | | PLN | Euro |
| Short acting beta | 100% | 4.02 | 1.03 |
| Anticholinergics | 100% | 0.01 | 0.0026 |
| Combined short acting beta agonist and inhaled steroids | 100% | 0.17 | 0.04 |
| Long acting beta agonists | 100% | 3.08 | 0.78 |
| Inhaled steroids | 100% | 3.68 | 0.94 |
| Systemic steroids | 100% | 1.58 | 0.40 |
| Antibiotics | 98% | 0.44 | 0.11 |
| Anticholinergics | 92% | 2.91 | 0.73 |
| Diagnose Therapy | 30% | 0.12 | 0.03 |
| Disposable equipment and materials | 100% | 0.28 | 0.07 |
| TOTAL | | 18.18 | 4.70 |

DRUG UTILIZATION

| Hotel cost per day, respiratory ward | Length of average/hospital admission | Total cost per patient |
|--------------------------------------|--------------------------------------|------------------------|
| 200 PLN (50 Euro) | 10 | 2000 PLN (500 Euro) |

HOSPITAL STAY COSTS

| Hotel cost per day, emergency care unit | Length of stay at emergency care unit | Total cost per patient |
|---|---------------------------------------|------------------------|
| 48.0 PLN (12.0 Euro) | 1 | 48.0 PLN (12.0 Euro) |

| Personnel cost per day, respiratory ward | Length of average/hospital admission | Total cost per patient |
|--|--------------------------------------|--------------------------|
| 66.30 PLN (16.50 Euro) | 10 | 663.00 PLN (165.00 Euro) |

PERSONNEL COSTS

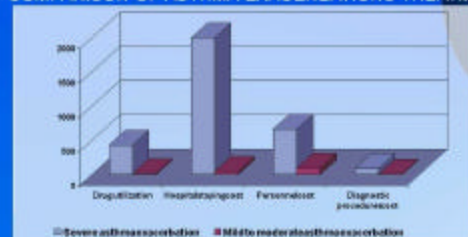
| Personnel cost per day, emergency care unit | Length of stay at emergency care unit | Total cost per patient |
|---|---------------------------------------|------------------------|
| 96.7 PLN (24.15 Euro) | 1 | 96.7 PLN (24.15 Euro) |

| Resource use | Total cost PLN | Total Cost Euro |
|-------------------------------|----------------|-----------------|
| Operations | 1.7 | 0.43 |
| ECG | 5.0 | 1.25 |
| Arterial blood pressure | 10.0 | 2.50 |
| Arterial blood gases | 5.0 | 1.25 |
| Blood count and coagulability | 50.5 | 12.63 |
| SpO2 saturation for 60min | 5.5 | 1.38 |
| Therapy laboratory | 5.0 | 1.25 |
| Pulse oximetry | 1.8 | 0.45 |
| TOTAL | 91.4 | 22.86 |

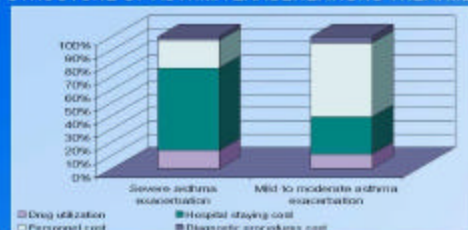
DIAGNOSTIC PROCEDURES COSTS

| Resource use | Total cost | |
|-------------------------------|--------------|-------------|
| | PLN | Euro |
| Operations | 0.09 | 0.02 |
| ECG | 5.1 | 1.28 |
| Flow chart | 2 | 0.50 |
| Arterial blood gases | 5.1 | 1.28 |
| Blood count and coagulability | 1.09 | 0.27 |
| SpO2 saturation for 60min | 2.29 | 0.58 |
| Therapy laboratory | 4 | 1.00 |
| Pulse oximetry | 0.45 | 0.11 |
| TOTAL | 18.02 | 4.56 |

COMPARISON OF ASTHMA EXACERBATIONS TREATMENT



STRUCTURE OF ASTHMA EXACERBATIONS TREATMENT COSTS



SUMMARY

| Cost categories | Severe asthma exacerbations (10 days) | | Mild to moderate asthma exacerbations (1 day) | |
|-----------------------|---------------------------------------|---------------|---|--------------|
| | PLN | Euro | PLN | Euro |
| Drug utilization | 435.31 | 109.83 | 18.18 | 4.70 |
| Staying at hospital | 2000.00 | 500.00 | 48.00 | 12.00 |
| Personnel | 663.00 | 165.75 | 96.7 | 24.15 |
| Diagnostic procedures | 91.40 | 22.86 | 18.02 | 4.56 |
| TOTAL | 3190.61 | 797.65 | 172.91 | 43.15 |

The average cost of inpatient treated (10 days) severe asthma exacerbation was estimated at 3190.61 PLN (797.65 EUR) per one patient. The average cost of hospital emergency room asthma mild to moderate exacerbations treated was estimated at 172.91 PLN (43 EUR) per patient/day.

CONCLUSION

Cost of asthma exacerbations treatment are relatively high due to hospitalization cost, not due to cost of drugs utilization. Correct and systematic asthma treatment (according to GINA guidelines) can prevent asthma exacerbations (mild to severe), and lead to decrease cost of asthma care.

DISCUSSION

This cost analysis of asthma exacerbations treatment is one of the first performed in Poland. Further analysis should include more centers to allow confidence interval estimation.