Clinical pathway for the treatment of primary spontaneous pneumothorax in a general surgery department

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
A clinical pathway for the treatment of primary spontaneous pneumothorax was considered. The clinical pathway consisted of protocols for chest radiographs, pleural drain placement, non operative treatment and the follow-up of patients with a pleural drain.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients with spontaneous pneumothorax.

Setting
The setting was secondary care. The economic study was carried out in Murcia, Spain.

Dates to which data relate
The effectiveness and resource use data related to 2003 for the intervention group and to 2001 for the comparator group. The price year was not reported.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The cost data were collected from the same patient sample that provided the effectiveness data, but it was unclear whether the data were collected retrospectively or prospectively.

Study sample
The study consisted of two patient samples, one before and one after the implementation of the clinical pathway. The inclusion criteria specified a spontaneous pneumothorax without underlying pulmonary abnormality. Patients with a pneumothorax due to trauma were excluded from the sample. Both samples were consecutive patients presenting at the study hospital. There were 34 patients in the before-implementation sample and 31 in the after-implementation group. No sample size or power calculations were reported in this paper.
Study design
This was a single-centred, comparative study with a historical control group. The patients were followed up for the duration of their hospital stay and, consequently, no loss to follow-up was reported.

Analysis of effectiveness
The measures of effectiveness used in the study were the number of chest radiographs and length of hospital stay. The paper indicated that the characteristics of the patients in the two samples were similar.

Effectiveness results
The mean number of chest radiographs was 4.3 (standard deviation, SD=2.4) in the before-implementation group and 3.2 (SD=2.2) in the after-implementation group, (p=0.028).

The mean hospital stay was 7.32 (SD=3.90) days in the before-implementation group and 5.00 (SD=2.91) days in the after-implementation group, (p=0.053).

Clinical conclusions
The authors concluded that the treatment of spontaneous pneumothorax after the implementation of the clinical pathway was more effective than prior to its implementation.

Measure of benefits used in the economic analysis
No measure of health benefit was synthesised with the cost data, therefore, a cost-consequences study was undertaken.

Direct costs
The direct costs of the hospital were included in the study. The resource use data were collected from the patient sample that provided the effectiveness data, while the unit costs were taken from the study hospital accounting department. Some resource use data (length of hospital stay and number of chest radiographs) were detailed in the paper, but individual unit costs were not. The resource use data for the before-implementation group related to 2001, while that for the after-implementation group related to 2003. The price year was not reported.

Statistical analysis of costs
Differences in the total costs between the two patient groups were tested using Student’s t-test.

Indirect Costs
No indirect costs were included in the paper.

Currency
Euros (EUR)

Sensitivity analysis
No sensitivity analysis was conducted.

Estimated benefits used in the economic analysis
Not applicable.
### Cost results
The mean total cost per session of treatment in the pre-clinical pathway group was EUR 1,863 (+/- 989), compared with a mean total cost per patient of EUR 1,168 (+/- 578) in the post-clinical pathway implementation group, (p=0.00023).

### Synthesis of costs and benefits
Not relevant.

### Authors' conclusions
The implementation of a clinical pathway reduced both variation in care patterns and hospital costs of treating spontaneous pneumothorax.

### CRD COMMENTARY - Selection of comparators
The authors compared clinical care and the costs of spontaneous pneumothorax before and after the implementation of a clinical pathway. These options were chosen to allow a comparison between practice when the clinical pathway was implemented and the previous usual practice in the study setting. You should consider how these options relate to usual practice in your own setting before applying the results of this study.

### Validity of estimate of measure of effectiveness
The measure of effectiveness was taken from a comparative study with a historical control group. This study design had a number of inherent flaws, including the time difference between the two patient groups. However, it might not have been possible to design a single-centred, randomised controlled trial to assess the impact of implementing such a clinical pathway. The authors did not compare their two patient samples with the patient population. The analysis of the data appears to have been undertaken appropriately. No adjustment for differences between the two patient groups was made as the authors noted that their baseline characteristics were similar. Given the limitations, the internal validity of the analysis is likely to be quite low.

### Validity of estimate of measure of benefit
No measure of health benefit was used in this study. The reader is thus referred to the comments in the 'Validity of estimates of measure of effectiveness' field (above).

### Validity of estimate of costs
A hospital perspective appears to have been used in this study. As such, it would appear that all appropriate costs have been included. A full breakdown of resource use and unit costs was not provided in the paper, and this may limit the generalisability of the study results. The difference in total costs per session and per patient in the two patient groups was assessed using an appropriate statistical test. However, this analysis was limited to the total cost data, and uncertainty and variability in the resource use and unit cost data were not fully explored. In addition, no price year was reported, which will limit any future reflation exercises.

### Other issues
The authors do not appear to have presented their results selectively. They concluded that the implementation of the clinical pathway reduced variation in treatment. However, it is not clear that the study analysis directly addressed this question, as the difference between the two patient groups was considered rather than the variation in treatment within the groups. The authors compared their results with those of other studies and discussed the similarities in their findings.

### Implications of the study
The authors did not make any direct recommendations for further research or changes to practice.

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