Safety and pharmacoeconomics of a cluster administration of mite immunotherapy compared to the traditional one

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
Cluster administration of mite immunotherapy in adult patients with respiratory allergy was examined. The cluster schedule consisted of injections at increasing doses every 20 - 30 minutes, 2 to 5 times a day, repeated after 3- to 7-day intervals.

Type of intervention
Secondary prevention (immunisation).

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised adult patients suffering from a respiratory allergy due to dust mites. The inclusion criteria were history of rhinitis and/or mild to moderate asthma for at least 2 years, skin prick test (>3 mm) and CAP-RAST (Class III or more) positivity for Dermatophagoides pteronyssinus and/or farinae, and age between 12 and 60 years.

Setting
The setting was a hospital. The economic study was carried out in Italy.

Dates to which data relate
The dates during which the effectiveness and resource use data were gathered were not reported. The price year was not given.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing was carried out prospectively on the same sample of patients as that included in the analysis of effectiveness.

Study sample
Power calculations were not performed. A sample of 38 patients was enrolled, of which 19 patients were in each group. The age range was 14 to 48 years in the cluster group and 12 to 46 years in the traditional group. There were 9 women in the cluster group and 8 women in the traditional group.
Study design
This was a prospective, randomised, open-label, clinical trial. The number of centres involved in the analysis was not reported. Details of randomisation were not provided. The overall length of follow-up was 1 year. No patient was lost to the follow-up assessment. All patients were observed for at least 30 minutes after the injections.

Analysis of effectiveness
The analysis of the clinical study was conducted on an intention to treat basis as no patient was lost to follow-up. Thus, the analysis considered all evaluable patients. The primary outcome measure was the incidence of side effects (local reactions) per patient and per injection. The patients were also asked if they tolerated the injections. Side effects were classified and graded, according to international guidelines, as local/systemic or mild to severe. The baseline comparability of the study groups was not discussed.

Effectiveness results
In the cluster group, there were 8 local reactions in 3 patients (15.9% of patients and 5.4% of injections). The reactions (erythema and swelling at the site of injection) were all delayed by 6 to 8 hours and occurred after the second cluster. None of the reactions required pharmacological treatment.

In the traditional group, there were 6 local reactions in 6 patients (31.5% of patients and 2.4% of injections). The reactions were erythema and swelling at the site of injection. As in the cluster group, pharmacological treatment was not required.

The differences between the groups were not statistically significant.

All patients tolerated the injections well but, in general, patients stated that they were not comfortable to stay in the hospital for 1 hour with the cluster schedule.

Clinical conclusions
The effectiveness analysis showed that the two types of drug administration were similar in terms of safety.

Measure of benefits used in the economic analysis
No summary benefit measure was used in the economic analysis because the two treatments were similar and comparable in terms of their safety profiles, as demonstrated in the effectiveness analysis.

Direct costs
The analysis of the direct costs considered only those costs associated with the injection. The unit costs and the quantities of resources used were presented separately. Resource use was estimated using data derived from the sample of patients included in the effectiveness analysis. The source of the costs was not explicitly stated, but it might have been the authors’ institution. Discounting was not relevant as only costs incurred in the short term were considered. The price year was not reported.

Statistical analysis of costs
Statistical analyses of the costs were not performed.

Indirect Costs
Indirect costs, in terms of the time spent to go to the clinic and to wait after the injection, were considered. The unit cost was presented separately from the quantities of resources used. The cost of time was derived from Italian official statistics. The quantities of resources used were based on data retrieved from the sample of patients included in the
clinical trial, as well as authors’ assumptions (1.5 hour for each injection, including 1 hour for moving, plus 30 minutes waiting). Discounting was not performed and the price year was not reported.

Currency
Euros (EUR).

Sensitivity analysis
Sensitivity analyses were not carried out.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The cost of injection was EUR 46 in the cluster group and EUR 92 in the traditional group.

The indirect cost of time was EUR 138.40 in the cluster group and EUR 337.35 in the traditional group.

The total costs per patient were EUR 184.40 in the cluster group and EUR 429.35 in the traditional group.

Synthesis of costs and benefits
A synthesis of the costs and benefits was not relevant as, in effect, a cost-minimisation analysis was carried out.

Authors’ conclusions
The cluster immunisation schedule for adult patients suffering from respiratory allergy due to dust mites was as safe as the traditional strategy. Although patients had to stay in the clinic for at least 1 hour at each cluster, the overall costs were lower in comparison with the traditional schedule.

CRD COMMENTARY - Selection of comparators
The authors provided a clear justification for the choice of the comparators, which were appropriate given the objective of the study. You should decide whether they are valid comparators in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness evidence came from a clinical trial, which was appropriate for the study question. The method of randomisation was not described and limited information on the method of sample selection was reported. In particular, it was not stated whether some patients refused to participate or were excluded from the study. Power calculations were not performed to determine the appropriateness of the sample size. The authors did not discuss the baseline comparability of the study groups. Statistical analyses were carried out but, owing to the small sample of patients, it was unclear whether the study had sufficient power to detect statistically significant differences between the groups. The length of follow-up was appropriate. The evidence is presumed to have come from a single centre, thus caution is required when extrapolating the results of the analysis to other settings. The authors stated that blinding was not authorised by the ethical committee at their institution. The use of masking would have reduced the potential impact of bias in the assessment of the outcomes. In general, few details of the clinical analysis were reported. The study did not explicitly assess the efficacy of the two schedules, as the analysis focused on safety and tolerability profiles.

Validity of estimate of measure of benefit
No summary benefit measure was used in the analysis because a cost-minimisation analysis was conducted. Please refer
to the comments in the 'Validity of estimate of measure of effectiveness' field (above).

**Validity of estimate of costs**
The perspective chosen for the analysis was unclear since only the direct costs of injections and the indirect costs of time spent to reach the clinic and receive the treatment were included. Other direct medical costs could have been relevant. The cost calculation was transparent in that the unit costs and quantities of resources used were given, which enhances the possibility of replicating the analysis in other centres. However, the source of the direct costs was not stated and the cost estimates were specific to the study setting. The impact of using alternative cost estimates was not investigated. Statistical tests were not carried out to assess the significance of the cost comparison. The price year was not reported, which will present difficulties for anyone wishing to conduct reflation exercises in other time periods.

**Other issues**
The authors did not compare their findings with those from other studies. They also did not address the issue of the generalisability of the study results to other settings. Sensitivity analyses were not performed, thus the external validity of the study may be limited. The study referred to adult patients suffering from respiratory allergy due to dust mites and this was reflected in the authors' conclusions.

**Implications of the study**
The study results suggested that cluster administration of immunisation for patients with respiratory allergy could represent an efficient alternative to traditional schedules. The authors pointed out that it would be useful, before prescribing specific immunotherapy, to inform patients about the available options since the optimal treatment should take not only efficacy and safety into account but also the patients’ preferences.

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None stated.

**Bibliographic details**

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**Other publications of related interest**


**Indexing Status**
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**MeSH**
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