Impact of new eligibility criteria on a screening program for retinopathy of prematurity: one-year evaluation

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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
The use of specific eligibility criteria for retinopathy of prematurity (ROP) screening in newborns. The inclusion criteria were related both to weight or gestational age and clinical condition. These were a birth weight of 1,250 g or less or a gestational age of 30 weeks or less (weight/gestational age), and very serious neonatal medical problems according to the neonatologist (clinical condition).

Type of intervention
Screening.

Economic study type
Cost-effectiveness analysis.

Study population
The study population included newborns, as reported in the inclusion criteria of the screening programmes.

Setting
The setting was a hospital. The economic study was carried out at the Hospital 12 de Octubre in Madrid, Spain.

Dates to which data relate
The effectiveness and resource use data were gathered in 1999. The price year was 1999.

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

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

Study sample
All newborns meeting the two eligibility criteria were included in the study sample. In terms of the 1991 to 1998 criteria, a sample of 244 children was considered. Of these, 105 were selected using the clinical criteria and 139 using the weight/gestational age criteria. In terms of the 1999 criteria, a sample of 72 children was considered. Of these, 7 were selected using the clinical criteria and 65 using the weight/gestational age criteria. Power calculations to determine the sample size were not performed.
Study design
This was a prospective cohort study carried out in a single centre, the Hospital 12 de Octubre in Madrid, Spain. All newborns in 1999 were enrolled in the study and underwent screening according to the two eligibility criteria. All the infants underwent ophthalmologic control when 1-year old, as a form of final checking. The patients were not followed after screening.

Analysis of effectiveness
All patients included in the study were accounted for in the analysis. The primary health outcomes were the reduction in the number of patients screened, and the actual number of newborns found with ROP. Comparability of the study groups was not required since the same cohort of newborns was used for the effectiveness analysis.

Effectiveness results
The number of patients screened according to the clinical criteria was 105 with the 1991 to 1998 criteria and 7 with the 1999 criteria. Consequently, the reduction in the number of patients screened was 98 (93%).

Only 2 patients were found with ROP. These were detected with the 1999 criteria.

The mean number of examinations was 1.5, thus the number of avoided examinations was 147.

The number of patients screened according to the weight/gestational age criteria was 139 with the 1991 to 1998 criteria and 65 with the 1999 criteria. Consequently, the reduction in the number of patients screened was 74 (53%).

Thirty-three patients were found with ROP. These were detected with the 1999 criteria.

The mean number of examinations was 3, thus the number of avoided examinations was 222.

Overall, considering both the weight/gestational age and clinical criteria, the number of patients screened was 244 with the 1991 to 1998 criteria and 72 with the 1999 criteria.

The reduction in the number of patients screened was 172 (70%).

The screening performed when all the children were one-year old showed that none of those that did not meet the 1999 eligibility criteria suffered from ROP.

The number of avoided examinations was 369.

Clinical conclusions
The new 1999 eligibility criteria for the ROP screening proved to be effective, as all newborns potentially suffering from ROP were detected.

Measure of benefits used in the economic analysis
The health outcomes were left disaggregated and no summary benefit measure was used. A cost-consequences analysis was therefore carried out.

Direct costs
The costs included in the economic analysis referred to the ophthalmologic visit performed at the hospital. The unit cost and the number of visits were reported separately. The cost/resource boundary was that of the hospital. The quantities were estimated using actual data derived from the hospital. The unit cost of the visit was estimated from a published study, which referred to US costs. Discounting was irrelevant as all the costs were incurred over one year. The price year was 1999.
Statistical analysis of costs
No statistical analyses of the costs were performed.

Indirect Costs
The indirect costs were not included.

Currency
Euros.

Sensitivity analysis
No sensitivity analysis was carried out.

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

Cost results
The overall cost-savings due to the 1999 eligibility criteria for ROP screening were more than 30,000 euros, as the number of avoided examinations was 369 and the cost of each examination was 82 euros.

Synthesis of costs and benefits
Irrelevant as a cost-consequences analysis was carried out.

Authors' conclusions
The new eligibility criteria for screening for retinopathy of prematurity (ROP) were effective in detecting children with the disease. In addition, they reduced the costs of the programme.

CRD COMMENTARY - Selection of comparators
The authors justified their choice of the comparator. The new eligibility criteria introduced in 1999 were compared with the standard practice, which was represented by the eligibility criteria used in 1991 to 1998. You should assess whether they represent widely used interventions in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness analysis used a prospective cohort study. This was appropriate for the study question since all the patients underwent both screening methods. The study sample appears to have been representative of the study population. Power calculations were not performed. Comparability of the study groups was not required since a single cohort of patients was used, thus reducing the role of confounding and selection bias.

Validity of estimate of measure of benefit
No summary benefit measure was used in the economic analysis.

Validity of estimate of costs
The cost analysis only included the ophthalmologic visit, and the unit cost was derived from a published study. However, the estimated costs referred to the US setting. The authors noted that it may not have been relevant in the Spanish context of public provision of health services. The price year was reported. Discounting was not carried out,
which was appropriate since the time horizon of the study was one year. The costs were treated deterministically as no statistical analysis was carried out.

Other issues
The authors compared their findings with those from other studies. However, the generalisability of the study to other settings was limited as no sensitivity analyses were carried out. The authors noted that their findings should not be generalisable to other settings, as each centre may experience different eligibility criteria for ROP screening according to specific experience and results.

Implications of the study
The authors note that, although the study showed the improved effectiveness and reduced costs of the new criteria for ROP screening, the adoption of such criteria should be tailored to the specific characteristics of each health centre.

Source of funding
None stated.

Bibliographic details

PubMedID
11412469

Indexing Status
Subject indexing assigned by NLM

MeSH
Cost-Benefit Analysis; Humans; Infant, Newborn; Infant, Premature; Neonatal Screening /economics /standards; Retinopathy of Prematurity /economics /prevention & control; Spain

AccessionNumber
22001006781

Date bibliographic record published
31/03/2003

Date abstract record published
31/03/2003