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Title **A Review of the Clinical Effectiveness and Cost Effectiveness of Routine Anti-D Prophylaxis for Pregnant Women Who Are Rhesus Negative**

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Aim

To evaluate the clinical effectiveness of antenatal anti-D prophylaxis (AADP) for pregnant women who are RhD negative, and the comparative cost effectiveness of: 1) offering routine AADP to all pregnant women who are RhD negative, 2) offering routine AADP only to primigravidae who are RhD negative, and 3) not offering routine AADP.

Conclusions and results

Eleven studies met the inclusion criteria. Two nonrandomized, community-based studies suggest that routine AADP may reduce the sensitization rate from 0.95% to 0.35%. This gave an odds ratio for the risk of sensitization of 0.37, and an absolute reduction in risk of sensitization in RhD-negative mothers carrying a RhD-positive child of 0.6%. The number needed to treat (NNT) to avoid one case of sensitization was 278, and to avoid a fetal or neonatal loss in next pregnancy the estimate is 5790. If cost savings from reductions in treating hemolytic disease of the newborn are considered, the total net cost to the NHS in England and Wales would be £5.7–6.4 million per year. If routine AADP is only given to RhD-negative primiparae, the total net cost, including potential savings from reductions in hemolytic disease of the newborn, is estimated at approximately £2.3–2.6 million. Routine AADP for RhD primiparae was economically attractive based on disability prevention alone, irrespective of parental grief and valuation of stillbirths, neonatal and postneonatal deaths. Routine AADP in all pregnant RhD-negative women is economically attractive, using a maximum acceptable cost-effectiveness ratio of £30 000 per QALY, if the lost child, associated parental grief, and high intervention pregnancy are valued above 9 QALYs.

Recommendations

The evidence suggests that routine AADP is effective in reducing the number of RhD-negative pregnant women who are sensitized during pregnancy. Some cases of sensitization in the UK are due to failure to adhere to the existing guidelines. It should be possible to reduce sensitization rates by stricter adherence to current guidelines, and this could be pursued before initiating guidelines to routinely offer AADP to pregnant women who are RhD negative.

Methods

A systematic literature review identified all studies that compared women receiving routine AADP with untreated controls or that evaluated the economic impact of routine AADP. Economic evaluation was based on a model offering routine AADP to all pregnant RhD-negative women, and to RhD-negative primigravidae only, in addition to conventional AADP applicable to the NHS. This evaluation assessed the cost per fetal loss, stillbirth, neonatal, or postneonatal death avoided, the cost per life-year gained (LYG), and the cost per quality-adjusted life-year (QALY) gained from disabilities avoided.

Further research/reviews required

Further research is required to: 1) identify characteristics which might identify the 10% of RhD-negative women at risk of sensitization, so antenatal prophylaxis may be targeted specifically at these women 2) confirm or disprove the preliminary findings that protection against sensitization provided by AADP in primigravidae extends beyond the first pregnancy.

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