Interhospital variation in the RATPAC trial (Randomised Assessment of Treatment using Panel Assay of Cardiac markers)


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.

CRD summary
The aim was to explore the variation in outcomes and costs, across those hospitals participating in the RATPAC trial, which evaluated point-of-care assessment by panel assay versus usual care, to exclude myocardial infarction, in patients with chest pain. The authors concluded that successful discharge and the costs, with point-of-care assessment, varied between hospitals, depending on the protocol, practices and facilities in each setting. The authors' conclusions seem reasonable, given their objective.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The aim was to explore the variation in outcomes and costs across those hospitals participating in the Randomised Assessment of Treatment using Panel Assay of Cardiac markers (RATPAC) trial, which evaluated point-of-care assessment using the panel assay or standard care, to exclude myocardial infarction, in patients with chest pain.

Interventions
The two diagnostic processes were point-of-care assessment of creatine kinase muscle brain (MB) enzyme, myoglobin, and cardiac troponin I at baseline, and at 90 minutes; and standard care, which included a range of troponin assays and creatine kinase biomarkers, according to the guidelines at each hospital.

Location/setting
UK/hospital in-patient.

Methods
Analytical approach:
The analysis was based on data from a multicentre trial, with a three-month time horizon. The authors did not state the perspective.

Effectiveness data:
The effectiveness data were from the RATPAC trial: an unblinded randomised controlled trial of 2,243 patients in six UK hospitals. The participants were adults (aged over 25 years) with acute chest pain, possibly due to myocardial infarction, within the previous 12 hours. All patients were followed-up by case note review and self-completed postal questionnaires at one and three months. The efficacy of the two diagnostic strategies was measured by the proportion of patients who were successfully discharged. Successful discharge had to fulfil two criteria: patients had either left hospital or were awaiting transport home, with a discharge decision having been made within four hours of initial presentation; and they had suffered no major adverse event in the following three months. The proportion of patients successfully discharged was analysed through logistic regression; adjusted odds ratios were calculated, taking into account age, gender, and past history of coronary heart disease. The odds ratios, with 95% confidence intervals, were reported for each hospital.

Monetary benefit and utility valuations:
Not relevant.
Measure of benefit:
The benefit measure was the proportion of patients who were successfully discharged.

Cost data:
The costs included hospital, community, and social care resources. Hospital resources were identified from the case notes, and included the length and location of hospital stay, use of cardiac interventions, out-patients reviews, emergency department attendances, and subsequent hospital admissions. The community and social care resources were identified by postal questionnaires. These resources were valued using national unit costs, and reported in UK £.

Analysis of uncertainty:
The 95% confidence intervals and the probabilities for the odds ratios were reported, with the difference in mean costs between the two strategies. Heterogeneity between hospital sites was assessed, using a likelihood ratio test and appropriate methods to account for missing resource use data.

Results
The point-of-care assessment resulted in a higher proportion of successful discharges in four hospitals, a lower proportion in one, and an equivalent proportion in another. The overall odds ratio for the proportion of patients successfully discharged was 3.81 (95% CI 3.01 to 4.82). By hospital centre, it was 11.07 for Edinburgh, 7.03 for Frenchay, 6.97 for Barnsley, 2.48 for Derriford, and 1.11 for Leicester, 0.12 for Leeds.

The total difference in mean costs per patient across all hospitals was £211.23 (95% CI -16.53 to 442.90), with point-of-care assessment being more expensive than standard care in most hospitals. By hospital centre, the differences were £646.57 for Edinburgh, £380.13 for Leicester, £158.86 for Derriford, £135.20 for Barnsley, £104.20 for Frenchay, and -£214.49 for Leeds.

There was evidence of between-hospital heterogeneity in the proportion of successful discharges ($X^2=75.5$, $p<0.001$). There was weak evidence of between-hospital heterogeneity in the difference in mean cost per patient with each strategy, using analysis of variance ($p=0.0803$).

Authors' conclusions
The authors concluded that successful discharge and the costs, with point-of-care assessment, varied between hospitals, depending on the protocol, practices and facilities in each setting.

CRD commentary
Interventions:
The selection of the interventions was appropriate. The proposed diagnostic strategy was compared with the most relevant alternative, which was the usual practice. A clear description of each strategy was given.

Effectiveness/benefits:
The main details of the RATPAC trial were clearly reported and the effectiveness data were clearly described. The authors stated that the trial had reported quality-adjusted life-years (QALYs) as an outcome, but these were not used for this analysis. The outcome was the proportion of patients who were successfully discharged, and this was relevant for the objective of the study, but it would have been interesting to see the variation in QALYs across the hospitals as well.

Costs:
The perspective was not explicitly stated. The included costs seem to have been appropriate for a UK societal perspective, with community and social care resource use included, and the costs were from UK national sources. Those costs that were included in the community and social care resources were not reported and the price year was not reported. Discounting was not necessary, given the short time horizon of the trial. The mean total costs were clearly reported, but a comprehensive analysis of the resource use by cost category was not.

Analysis and results:
No synthesis of the cost and outcome results was conducted; the cost and outcome data were reported separately. Uncertainty was only partly assessed in a limited analysis of the confidence intervals for the cost and effectiveness results. The authors stated that the main limitation of the RATPAC trial was the fact that the clinicians' behaviour
(especially discharge decisions) could have been influenced by their participation in the trial. If this influence varied between hospitals, it could have produced some of the variation in the results.

Concluding remarks:
The authors' conclusions seem reasonable, given their objective.

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