'White-coat' hypertension in patients with newly diagnosed hypertension: evaluation of prevalence by ambulatory monitoring and impact on cost of health care

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
Ambulatory blood pressure monitoring versus casual blood pressure monitoring for the diagnosis of hypertension to be treated by drugs.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis (but the effects and costs were not brought together: effectiveness was used only in the calculation of costs).

Study population
131 males and 124 females aged between 33 and 65. They all had systolic and diastolic blood pressure higher than 140

Setting
A referral centre in Italy.

Dates to which data relate
No dates for cost and effectiveness data were reported.

Source of effectiveness data
Single study and opinion based estimates.

Link between effectiveness and cost data
Costing was undertaken on the same patient sample. It was not stated whether the costing was undertaken retrospectively or prospectively.

Study sample
255 consecutive patients attending the secondary hypertension referral centre. No power calculations were performed. The same patient group was subjected to both diagnosis modes. Exclusion criteria were listed but the number of excluded patients was not stated. The patients had displayed casual blood pressure measurements repeatedly higher than 140/90 mmHg in 3 consecutive office visits over a 3 week period.

Study design
Case series study with the same group of patients subjected to both diagnosis modes. All patients underwent 24 hour ambulatory blood pressure monitoring and patients with a 24 hour blood pressure measurement of under 135/85 mmHg were classified as white-coat hypertensives.

**Analysis of effectiveness**
Average systolic and diastolic blood pressures with ambulatory blood pressure monitoring (while awake and asleep), and casual systolic and diastolic blood pressures were measured in all patients and results were presented.

**Effectiveness results**
54 patients (29 women and 1 man) were classified as white-coat hypertensive, or 21% (95% CI 16-26%) of the 255 hypertensives studied. Their systolic and diastolic blood pressure was 152 +/-11/96 +/-5 mmHg whereas the average sustained hypertensive measurement was 130 +/-4/78 +/-5 mmHg. Clinic and ambulatory blood pressure measurements were higher in patients with sustained hypertension than in those with white coat hypertension (p<0.05). For casual monitoring the white coat BP measurements were 92 - 96% of the sustained hypertensive measurements. For ambulatory BP measurement the white coat BP measurements were 80 - 84% of the sustained hypertensives measurements.

**Clinical conclusions**
The prevalence of white coat hypertension was about 21% in untreated patients with newly diagnosed hypertension. White-coat measurements of sustained hypertensives were lower in the case of ambulatory monitoring than in the case of casual BP monitoring. Ambulatory blood pressure monitoring avoids false positive diagnoses.

**Modelling**
A cost model was used to project costs over a 6 year period.

**Methods used to derive estimates of effectiveness**
The authors' assumptions were used.

**Estimates of effectiveness and key assumptions**
Ambulatory blood pressure monitoring was more accurate than casual blood pressure monitoring and avoids false positive diagnoses.

**Measure of benefits used in the economic analysis**
The accuracy and specificity of blood pressure monitoring techniques were considered as benefits.

**Direct costs**
Costs were projected over 6 years. 2 options were considered: (a) the cost of drug treatment for all patients classified as hypertensive according to casual BP and (b) ambulatory blood pressure monitoring of patients with 24 hour systolic and diastolic BPs of over 135/85 mmHg. Included in the cost calculations were the cost of the monitoring device, visits and laboratory tests (every 6 months) for treated patients and, for those found not to have hypertension on ambulatory monitoring, an ambulatory BP measurement every 2 years. The authors also evaluated a one year ambulatory BP measurement for those untreated. The costs in Italian lira were from the authors' unit and no further details were given. Quantities and costs were not reported separately.

**Statistical analysis of costs**
Confidence intervals were given around the cost-saving estimates.
Currency
Italian Lira (L). Conversions to US $ assumes $1 = 1547 Lire.

Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
Accuracy and specificity of blood pressure monitoring techniques.

Cost results
One clinic visit cost L26,400 ($17), laboratory tests cost L52,700 ($34) and an ambulatory blood pressure measurement cost L100,000 ($64.50). The cost of therapy was L1,450 ($0.94) per day. The B1 strategy (ABPM for all patients and an ABPM screening every two years for those found to have white-coat hypertension and therefore not treated) cost $569,073 (CI: $602,058-$538,634) and led to a saving of $110,819 (CI: $77,834-$141,258). Savings ranged between $93,057 (CI: $62,611-$123,849) and $120,964 (CI: $87,983-$153,946), depending on the cut-off point chosen. For strategy B2 (ABPM for all patients and a further ABPM screening every year for those found to have white-coat hypertension and therefore not treated) there was a saving of $100,348 over the 6 year period.

Synthesis of costs and benefits
Ambulatory blood pressure monitoring was more accurate, avoided false positive diagnoses and could lead to cost savings.

Authors’ conclusions
There was high prevalence of white coat hypertension among previously untreated hypertensives. The use of ambulatory blood pressure monitoring could be cost-saving as well as avoiding false positive diagnoses and treatment. Demographic data did not discriminate between the two types of patients, therefore devices such as ABPM are needed.

CRD Commentary
No details were given regarding the method of cost estimation and quantities and costs were not separately presented. No dates were given for the components of the study. No details were provided about how the patients were selected and nor was the number of patients excluded from the study (based on the stated criteria). No follow-up of patients was conducted, therefore the accuracy of ABPM in its diagnosis of some patients as white-coat hypertensive was uncertain. Finally, only the cost results were presented: there was no clear synthesis between costs and benefits. The generalisability of the study is also limited as cost data taken from an Italian setting may not be applicable to other countries.

Source of funding
None stated

Bibliographic details

PubMedID
7588903