Small, blue collar work site hypertension screening: a cost effectiveness study
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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
One-stage versus two-stage screening for hypertension. One-stage screening consists of a single blood pressure measurement and those with a diastolic blood pressure (DBP) of 90-99 mmHg and already on medication or DBP of 100-114 mmHg were advised to contact their physician within one month. Two-stage screening consisted of two screening tests two weeks apart, with those of high DBP (>90 mmHg) advised to contact their physician. This group was telephoned monthly up to 4 times to encourage physician contact.

Type of intervention
Secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Blue collar workers with a DBP of 90 to 114 mmHg, aged 25-64 who did not have a history of heart disease or hospitalisation for severe hypertension, were not pregnant or planning to be pregnant within the next 12 months.

Setting
The setting was the workplace (primary care). The economic study was carried out in Toronto, Canada.

Dates to which data relate
Data for the effectiveness analysis were collected in the period Jan-Nov 1987. Resources were costed in the same period. Prices related to 1987.

Source of effectiveness data
Evidence based on a single study.

Link between effectiveness and cost data
Cost data were collected prospectively on the patient sample used in the effectiveness study.

Study sample
Power calculations determined the sample size. Of the total number of employees screened, 688 had a blood pressure greater than 90 mmHg. Of those 688, 6% refused to participate or contact with them was lost; 15% was ineligible for the study; 79% (i.e. 545 subjects) agreed to participate in the study.281 subjects were randomised to one-stage screening and 264 to two-stage screening.
Study design
Randomised controlled trial (multicentre study). Participants were stratified by age, gender and diastolic blood pressure. Assessor of patients’ outcome was blind. The duration of follow up was one year. Loss to follow up was 25% for the one-stage group and 23% for the other.

Analysis of effectiveness
It was not stated if the analysis was based on intention to treat or treatment completers. A year-end assessment of trial participants was successfully undertaken for 80.4% of all patients. Primary outcomes were blood pressure, and whether the patient had seen their physician with regard to their blood pressure. To gain this information a questionnaire was distributed to patients and physicians. The two groups were shown to be comparable in demographic and socio-economic characteristics and health status.

Effectiveness results
Diastolic blood pressure (DBP) was found to be the same for both groups (88.7 versus 87.9 for one-stage and two-stage respectively; p=0.37). The average change in DBP was 7.8 and 9.3 mmHg (p=0.1) and both were significantly reduced from baseline (p<0.001). The average number of physician visits was 5.3 for both groups (p=0.99).

Clinical conclusions
No difference in outcome between the two methods of screening was found.

Measure of benefits used in the economic analysis
Since the clinical study showed no difference in benefit between intervention and comparator, the economic analysis was based on difference in costs only.

Direct costs
Equipment costs were discounted at 5%. Costs and quantities were not reported separately. Costs to health care, screening organisation and patients were considered, including screening costs (including follow up telephone calls), medical care costs (physician visits, laboratory tests etc) and participant (employer and employee) costs (e.g., for follow up, travel etc). The estimation of the costs was based on actual data (the units of analysis). Data were collected from participants’ year-end assessment and medical records. Prices related to 1987.

Indirect Costs
Costs were not discounted. Costs and quantities were not reported separately. Participant (employer and employee) costs were considered such as time spent for screening. Costs were based on actual data (i.e., units of analysis) and were derived using hourly wage rates. Prices related to 1985 and were reflated to 1987.

Currency
Canadian dollars

Sensitivity analysis
The only sensitivity analysis undertaken was varying the discount rate between 1% and 10%.

Estimated benefits used in the economic analysis
Not applicable.
Cost results
The average cost of screening a blue collar worker was $11.01. The screening costs increased to $125.67 if the blue collar worker had a DBP > 90 mmHg. The programme cost per mmHg reduction was $36.20 for one-stage screening and $34.11 for two-stage screening or $1,184.28 (one-stage) for a worker seeing a physician within 40 days compared with $1,116.79 for two-stage screening. However, if only screening costs were considered, the two-stage method costs would have been 11 to 37% higher, depending upon the effect.

Synthesis of costs and benefits
Not applicable.

Authors’ conclusions
Given no difference in outcome, one-stage screening was recommended as being the least costly method of hypertension screening. Moreover, it is easier to implement and offers a higher degree of confidentiality than two stage screening.

CRD Commentary
This study aimed to describe the most cost effective method of screening for hypertension in the workplace. In this respect its conclusions were largely sound. However, the study did not address the issue of whether screening for hypertension should be undertaken. It also did not consider other appropriate settings for screening. A further problem with the study was the low participation rate by employers. Given that this was only 11% there must be concern as to the generalisability of the study results. Finally, the study suffered from not saying whether the analysis was based on intention to treat or treatment completers. A treatment completer analysis may bias results.

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