

Detection of blood pressure in general practice screening or case finding ?

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SUMMARY. An attempt has been made to show that there is still a need to evaluate screening for moderate hypertension (i.e. diastolic blood pressure equal or above 110 mm Hg). At present it has not been satisfactorily shown that treatment reduces mortality and morbidity. It is suggested that in the meantime individual general practitioners can be encouraged to find cases and that this method is probably the most suitable for identifying patients with diastolic blood pressure levels above 110 mm Hg (diastolic IV).

In addition it has been indicated that at present we have little knowledge about how to make treatment acceptable and that this in itself needs further study. The question has also been raised as to who will do the work of screening and treating, and whether those earmarked to do this will find it acceptable. Finally, the need for accurate costing of the benefits and disadvantages before the wide-scale implementation of a screening service has been discussed.

Definitions

A basic confusion which has arisen in the argument over whether or not to screen for raised blood pressure in the community is that of supposing that case finding and screening are synonymous. They are in fact different entities in that screening is instigated by the doctor who takes the step of inviting patients to attend for an examination after which he will offer appropriate treatment to a 'diseased' or 'at risk' group.

On the other hand, case finding is concerned with identifying a disease when the patient as opposed to the doctor initiates the consultation. Here a doctor takes the decision to look for additional diseases, whatever the presenting symptom is that brings the patient to the surgery in the first place.

This differentiation between screening and case finding is more than just a semantic argument in that the criteria and resulting logistics of using one as opposed to another in general practice are different.

Detecting hypertension

For hypertension, the evidence at present does not support a policy of wide-scale screening. This does not, however, preclude an individual general practitioner from measuring the blood pressure on all or a specific group of his patients should they present to him in the first instance be it with dyspepsia, an ingrowing toe-nail, or any symptom whatsoever.

The individual hospital physician or general practitioner is in a different position from the epidemiologist, community physician, or health planner who instigates a wide-scale local or national screening programme. The former looks after patients who come with complaints and the physician, if he finds any abnormality, is bound to try to correct this by what he considers to be appropriate treatment or management.

The community physician when he introduces screening and treatment of 'well populations' is offering a service to people who have not sought it and who do not know whether they have any illness. He is essentially saying, "If you come to be screened and we find something wrong with you, then we can help you." He should, therefore, be convinced that he can offer those individuals, identified by the screening process, an effective therapy that will alter the natural history of the disease. He also has to be convinced that the treatment is acceptable and that providing the initial screening and follow-up is economically justified in relation to the yield of cases in the face of competing demands for resources. It is unrealistic to suppose that the financial resources of the National Health Service will ever be anything else but limited. It is therefore necessary that new forms of care be evaluated at an early stage before they become widely, expensively, and irreversibly applied.

TEN PRINCIPLES FOR SCREENING

Wilson and Jungner (1968) suggested ten principles that should ideally be fulfilled by a screening procedure. Screening for hypertension only fulfils three of these:

- (1) **The condition sought should be an important health problem,**
- (2) **There should be a recognisable latent or early symptomatic stage,**
- (3) **There should be a suitable screening test or examination.**

In contrast the other criteria are not so well established and will be considered in greater detail.

- (4) **The natural history of the condition, including development, from latent to declared disease should be adequately understood.**

In relation to blood pressure we have increased our knowledge about the natural history, but we are still not absolutely certain that treatment can halt or reverse early pathological changes. For example why have no treatment trials, even for severe hypertension, shown a reduction in coronary heart disease? Is it because to show a decrease one needs to treat at an early age for a longer time or is it that treatment decreases the risk of haemorrhage more than that of thrombosis?

The next two principles are probably the most important and are:

- (5) **There should be an accepted treatment for patients with recognised disease,**
- (6) **There should be an agreed policy on whom to treat as patients.**

Leishman (1955), Shirley Smith and Fowler (1955), and McMichael and Murphy (1955) and others have shown that the treatment of severe hypertension reduces the chances of death from stroke, renal, and cardiac failure. More recently investigators have been concerned with moderate hypertension. The last Veterans' Administration Study (1970), which looked at pressures of 90–114 mm Hg showed that treatment was most effective in preventing hypertensive complications and least effective in preventing atherosclerotic ones.

These findings were only significant for those individuals with blood pressures above 105 mm Hg. It should be pointed out that the study measured pressures using diastolic V as the cut-off point—the disappearance of sounds. This level approximates to 110 mm Hg if one uses diastolic IV—muffling of sounds. It is not certain whether these findings can be applied to the population at large in this country. The individuals in the study were highly selected, highly compliant, 50 per cent black and with a risk of cardiovascular complications that appears to have been unusually high. At present there is no good evidence for treatment of diastolic blood pressure of below 110 mm Hg (diastolic IV). What can we do about this?

Firstly, we can repeat the work carried out by the Veterans' Administration on a sample more representative of the general population. A large pilot study, under the auspices of the Medical Research Council, is being undertaken at present in this country screening and treating for diastolic blood pressure levels of 90–109 mm Hg (diastolic V, Miall, 1975). Until this has been completed there is no place for advocating wide-scale national screening programmes for moderate hypertension. Secondly, patients could be screened for diastolic levels of blood pressure above which treatment has been shown to be beneficial (i.e. ≥ 110 mm Hg (diastolic IV). Screening carried out on an outpatient population by Hamilton *et al.* (1954) showed that 2.9 per cent of men aged 35–64 inclusive had diastolic blood pressure of 115 mm Hg or more. They used diastolic IV as the cut-off point, so that if one makes a correction of 5 mm Hg, this would be equivalent to approximately 110 mm Hg. The national Health Survey (1964) carried out in America showed that 1.2 per cent of white males aged 18–79 years had levels above 110 mm Hg (diastolic V).

Careful consideration has to be given as to whether the work involved in mass screening is worth the small yield of cases that will be found and benefit from treatment and if it would not be best to encourage general practitioners to take the blood pressure on patients only when they consult. The Office of Population Censuses and Surveys and The Royal College of General Practitioners (1974) reported that 67 per cent of patients of all ages on a doctor's list consult at least once annually and Morrell (1970) has reported that 72 per cent of men aged 35–64 years are seen during this same time interval.

D'Souza *et al.* (1975) have been responsible for a study which attempted to evaluate the effectiveness of multiphasic screening and which included measuring blood pressure as one of its tests. Seven thousand patients aged 40–64 years belonging to two group practices were randomly allocated into screening and control populations. The screening group were invited by letter to attend screening clinics while the control group were not screened and only received treatment for a disease if they presented to their practitioners in the usual way. At the end of the study this control group was also examined and it was found that virtually all the patients (96 per cent) with diastolic pressures of above 100 mm Hg (diastolic V) had been seen at least once during the previous five-year period and that it was probable that their raised blood pressure would have been detected by simple case finding without need for screening clinics.

More important, however, is the question of whether an intensive screening drive, treatment and follow-up is any more successful than treating patients when they present to doctors on their own accord. The Kaiser-Permanente Study (Dales *et al.*, 1973) showed that there was no significant difference in mortality from 'hypertension-associated' disease between a screened and control group over seven years.

Furthermore D'Souza (1975) showed that total mortality between the control and screened groups of patients was again not significantly different and perhaps more relevantly, the levels of blood pressure were no lower in the screened than in the control group. Even though this evidence suggests that mass screening offers little benefit, it should not deter practitioners from case finding and measuring the blood pressure of patients presenting to them. Certainly the data if anything suggest that this approach is as successful as screening.

(7) The test should be acceptable to the population

The next aspect is that covered by the seventh of Wilson's and Jungner's criteria. This is:

The test should be acceptable to the population. All doctors know how difficult it is to persuade the chronic bronchitic with obvious overt disease to give up smoking and how it is even harder to stop symptomless smokers, even though people are nowadays more aware of the risks involved. It is going to be far harder still to identify symptomless

patients and give them therapy which potentially can give rise to symptoms and which, in our present knowledge, has to be taken for life.

Stamler (1972) showed that only one eighth of the people suffering from hypertension in the United States have treatment adequate to lower their blood pressure to a diastolic level of less than 95 mm Hg. This derives from the fact that in the USA only half the hypertensives in the community are detected and that, amongst this group who have been identified and are aware of their disease, approximately half are not receiving treatment. Of the remaining quarter who are being treated, half are inadequately treated, leaving only one eighth on adequate therapy (Wilber and Barrow, 1972).

In addition we should not forget that we run the risk of making our patients adopt the sick role and, as has been shown by Gibson (1972) in Canada, increase their sickness absence. Our knowledge of compliance is rudimentary, and clearly as well as looking at the primary question of whether treatment reduces the subsequent morbidity and mortality, we need to have a clearer appreciation of compliance.

What is it that decides a patient to take his tablets and how do we reinforce the message that we are putting over? We will have to experiment with different drug packaging techniques, pay more attention to health education, and concern ourselves with how best to reinforce our prescribing instructions. This area is under-investigated, but is going to be of great concern in the years to come as preventive medicine takes on more importance.

(8) Facilities for diagnosis and treatment should be available

The eighth criterion is: facilities for diagnosis and treatment should be available.

If the Medical Research Council trial shows benefits from treatment, then we will have to concern ourselves with the question of who is going to do the work. In this country it is the general practitioner who is most likely to identify the symptomless hypertensive and who, by the very nature of his involvement on a day-to-day basis with patients, will be best suited to maintain contact with the patient once treatment has been started.

Hart (1970), Adler and Marson (1973), and Coope (1974) have all described the logistics and feasibility of screening for hypertension in general practice. The doctors involved in these studies are probably atypical and it is wrong to assume that other general practitioners would feel equally motivated to provide this type of service. Account has to be taken of the amount of work that will be involved. The number of individuals with diastolic blood pressures of 90 mm Hg and above and labelled as hypertensive will vary according to the number of recordings that are taken and the time interval between them. Hart (1970) using diastolic phase IV showed that in men aged 40–64 years, 16.5 per cent were classified as hypertensive (diastolic blood pressure \geq 105 mm Hg) at first screening, 7.8 per cent when measured on a second occasion, and seven per cent on the third.

However, the mean delay between the first and second reading was 18 months, which is longer than one would wait if the aim of the screening process was to treat. Hawthorne (1974) has shown a similar phenomenon over time. Armitage and Rose (1966) have suggested from their work that a mean of three readings on separate occasions should be used before labelling and treating an individual as hypertensive.

The screening carried out in the Lambeth area of London (Adler and Marson, 1973) showed that 25 per cent of men aged 35–64 years had diastolic blood pressures of above 90 mm Hg (using diastolic V and two measurements on one occasion). Hawthorne *et al.* (1974) showed that of men aged 45–64 years 26.0 per cent had diastolic pressures over 95 mm Hg (diastolic V, one measurement).

The last Census (Office of Population Censuses and Surveys, 1971) showed that there were nine million men in the 35–64 age group, just over two million of whom would be initially classified as hypertensive (diastolic blood pressure ≥ 90 mm Hg), even though not necessarily requiring treatment if measured more than once. The United Kingdom has about 24,000 general-practice principals and assistants working in the Health Service. In individual terms this means that each general practitioner will have to screen 375 men. These figures do not take into account women who on reaching their forties show higher mean blood pressures than men; a difference which increases thereafter with age (Hamilton, 1954; National Health Survey, 1964). They could also be expected to benefit from treatment. Will doctors be prepared to screen whole practices? If they do, it will require a re-orientation of the practitioners role away from cure to prevention, which will in turn only stem from a change in attitude amongst medical educationalists.

One can only hope that more heed will be paid to Hart's words (1975) "Such planning of essentially preventive work cannot only be more exciting than crisis-orientated curative medicine, but more human as well, for at its heart lies a concern with real and individual people rather than with the gross pathology of more or less advanced disease."

(9) Case finding should be a continuing process

The penultimate point made by Wilson and Jungner is that: case finding should be a continuing process and not a 'once and for all' project.

By this they are implying that screening must be organised as a continuing system since a screening service offered on a single occasion can only pick up a limited number of people and the respondents are not always the 'most diseased' individuals in the population. Again it would seem that it is the general practitioner who can provide this type of continuity.

It is always important that the cost of a new service or treatment be known before any long-term commitment is made and this is especially true in the present economic climate. It is interesting that concepts of rationing, cost benefit, and effectiveness only become truly respectable at times of economic restraint, whereas at other times they are often seen as techniques designed to interfere with clinical judgment.

(10) The cost of case finding should be economical

The tenth and final criterion that needs to be fulfilled for a screening procedure relates to this. It is: The cost of case finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole.

We need to be certain before embarking on a national screening programme that the benefits outweigh the losses. The mortality and morbidity from hypertension and associated diseases results in both direct and indirect costs to the country. The Office of Health Economics (1971) has estimated that hypertensive disease costs the National Health Service £20 million per year, over half of which is accounted for by expenditure on antihypertensive drugs. They also estimated sickness benefit due to absence from work for illness attributable to hypertension at £34 million. This gives a grand total of £54 million for costs to the NHS and sickness absence. These figures were calculated in 1969 and have increased considerably since. Using the change in the average annual retail price index up to September 1974, the cost will have increased from £54 – £124 million. In addition a proportion of the sickness absence cost from strokes and ischaemic heart disease is related to hypertension. Finally there are the personal costs due to such things as loss of employment and premature death.

There are no estimates available for the costs of screening and treating moderate hypertension in the United Kingdom. An important component may well be staff costs. The size of this will depend very largely on the attitude of general practitioners. It is to be hoped that, if treatment is shown to be efficacious, general practitioners will provide this as part of a comprehensive service and not demand a specific fee for identifying and treating a patient. Having said this it should be realised that nurses and lay staff could carry out the majority of screening, treatment and follow-up work and that this would constitute a cost (Hart, 1975; Alderman, 1975). Alternative ways of delivering this type of service will need to be studied.

It has been suggested by the Office of Health Economics (1971) that treating all those aged 35–74 years with diastolic blood pressures of 95 mm Hg or above would increase the drug costs to about £50 million a year. It is necessary, therefore, to calculate both the costs of providing screening and treatment and offset these against the savings in terms of the direct, indirect and personal costs should these be shown to occur. Once this has been done it will be necessary for the policy makers in the National Health Service to decide whether the provision of such a service is a useful way of spending money and a priority in terms of other competing demands for resources.

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