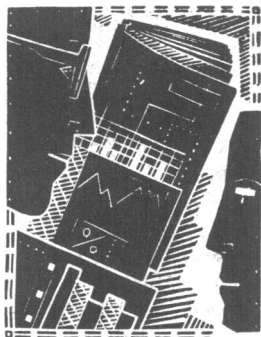


# AUDIT IN PRACTICE

THIS WEEK . . .



• In the first article Smith *et al* apply the rule of halves (a simple method of auditing blood pressure control in the community by examining detection, treatment, and control of hypertension) to assess the control of hypertension in more than 10 000 men and women from the Scottish heart health study. The World Health Organisation's definition of hypertension was unduly pessimistic, but even with the current criteria of the British Hypertension Society only a quarter of hypertensive men and 42% of hypertensive women are detected and treated satisfactorily.

• In the second article Blyth describes an audit of satisfaction of relatives and general practitioners with patient care in terminal illness in an urban general practice and concludes that improvements are required in communication between relatives and health professionals, in advice

on services and benefits, and in organisation of bereavement counselling.

• Hawkey *et al* seek to evaluate the cost effectiveness of reactive pharmacy intervention, based on interventions by 35 pharmacists in hospitals in Nottingham during one month, according to the potential of prescribing errors to harm patients. The effect on drug costs was negligible, certainly somewhat less than it cost to provide the service, but intervention seemed to be cost effective when the costs were balanced against the resulting improvements in patient care.

• Dr Williams *et al* relate their experience of retrospective review of hospital patient records in the commissioned article.

## Control of blood pressure in Scotland: the rule of halves

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### Abstract

**Objective**—Audit of detection, treatment, and control of hypertension in adults in Scotland.

**Design**—Cross sectional survey with random population sampling.

**Setting**—General practice centres in 22 Scottish districts.

**Subjects**—5123 Men and 5236 women aged 40-59 in the Scottish heart health study, randomly selected from 22 districts throughout Scotland, of whom 1262 men and 1061 women had hypertension (defined as receiving antihypertensive treatment or with blood pressure above defined cut off points).

**Main outcome measure**—Hypertension (assessed by standardised recording, questionnaire on diagnosis, and antihypertensive drug treatment) according to criteria of the World Health Organisation (receiving antihypertensive treatment or blood pressure  $\geq 160/95$  mm Hg, or both) and to modified criteria of the British Hypertension Society.

**Results**—In half the men with blood pressure  $\geq 160/95$  mm Hg hypertension was undetected (670/1262, 53%), in half of those in whom it had been detected it was untreated (250/592, 42%), and in half of those receiving treatment it was not controlled (172/342, 50%). In women the numbers were: 486/1061, 46%; 188/575, 33%; and 155/387, 40% respectively. Assessment of blood pressure according to the British Hypertension Society's recommendations showed an improvement, but in only a quarter of men and 42% of women was hypertension detected and treated satisfactorily (142/561, 25%; 215/514 respectively).

**Implications**—The detection and control of hypertension in Scotland is unsatisfactory, affecting management of this and other conditions, such as high blood cholesterol concentration, whose measurement is opportunistic and selective and depends on recognition of other risk factors.

### Introduction

The rule of halves states that half the hypertensive population is undetected, half of those detected are untreated, and in half of those treated hypertension is

not controlled. It was developed from the findings of surveys of blood pressure in the United States reported in the early 1970s,<sup>1,2</sup> and similar findings have been noted in Britain.<sup>3,4</sup> However, the rule of halves in the United States, where the management of hypertension has improved, no longer applies.<sup>5</sup>

The rule is more complex than it seems, and many factors may distort the findings. The selection of the study population is crucial, as is the age and sex distribution. Differences in the number of blood pressure readings and their circumstances, the method of measurement, and the position of the subject affect the findings.<sup>6</sup> Definitions of hypertension, awareness of raised blood pressure, and control all need to be standardised.<sup>7</sup> Formerly, the World Health Organisation's definition of hypertension was used, but the British Hypertension Society has recently suggested different indications for treatment.<sup>8</sup>

Because it is important to audit control of blood pressure in a country with high coronary mortality and stroke mortality we applied the old and new definitions of hypertension to the data from the Scottish heart health study to see whether the rule of halves still applies in the 1980s.

### Subjects and methods

The Scottish heart health study was designed to investigate the high mortality from coronary heart disease and its geographical variation.<sup>9</sup> It included a target sample of 450 men and women aged 40-59 selected randomly from each of 22 districts throughout Scotland and was conducted between 1984 and 1986.<sup>10</sup>

All subjects were asked whether they had been told by a doctor that they had high blood pressure. Details were collected about all drug treatment including that for high blood pressure. Blood pressure was measured twice in seated patients after five minutes' rest. Measurements were made at the first and fifth phase Korotkoff sounds with a random zero sphygmomanometer by nurses who had had systematic training and were subject to continuing monthly assessment as quality control. The two blood pressure readings were averaged for analyses.

The hypertensive population in the study was

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defined as those subjects receiving treatment or those with mean blood pressures over defined cut off points, or both. The standard cut off points in the original papers describing the rule of halves were for systolic blood pressure  $\geq 160$  mm Hg or for diastolic blood pressure (fifth phase)  $\geq 95$  mm Hg.<sup>1,2</sup> The criteria in recommendations of the British Hypertension Society<sup>8</sup> were also tested (see below).

### Results

Altogether 5123 men and 5236 women (74% response rate) participated in the Scottish heart health study and had their blood pressure measured. A quarter of the men (1262) and a fifth of the women (1061) were classified as hypertensive when hypertension was defined as receiving antihypertensive treatment or blood pressure  $\geq 160/95$  mm Hg, or both. Seventy three percent of men (920) and 64% of women (674) in this category were not currently receiving any antihypertensive treatment. Figure 1 shows how the rule of halves operates in this population when the original WHO definition is used.<sup>1</sup> For men aged 40-59 the rule applied particularly well, with 53% (670) of the hypertensive men not having their hypertension diagnosed, 42% (250) of those with hypertension diagnosed being untreated, and half (172) of those being treated not having their hypertension controlled. The rule applied less well, however, for women, in whom, although 46% (486) did not have their hypertension diagnosed, only 33% (188) with hypertension diagnosed were untreated and 40% (155) of the treated cohort had uncontrolled hypertension. Thirteen percent (170) of the male hypertensive population and 22% (232) of the female hypertensive population were satisfactorily treated according to the WHO definitions.<sup>7</sup>

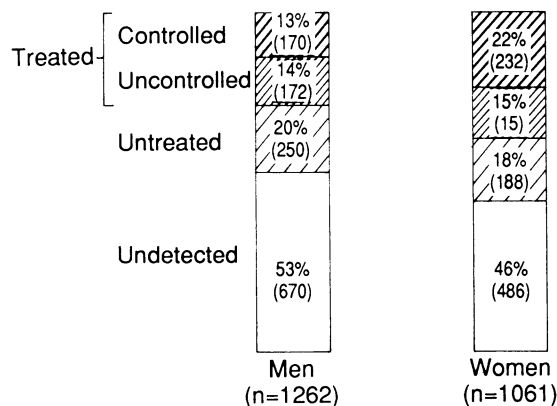


FIG 1—Rule of halves in hypertensive subjects from Scottish heart health study according to original WHO definition of hypertension

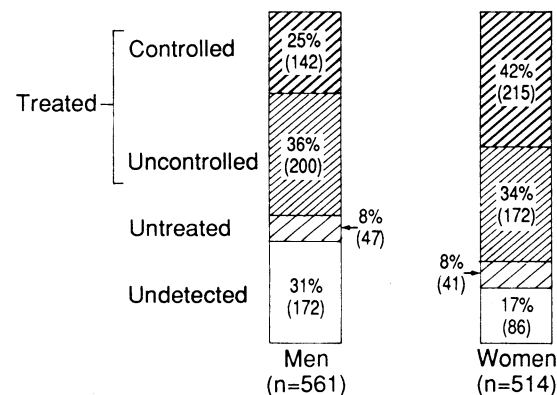


FIG 2—Rule of halves in hypertensive subjects from Scottish heart health study according to criteria for hypertension of British Hypertension Society

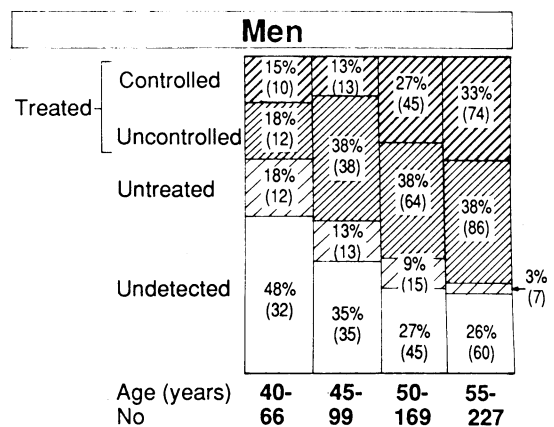


FIG 3—Rule of halves in hypertensive men in Scottish heart health study by age group

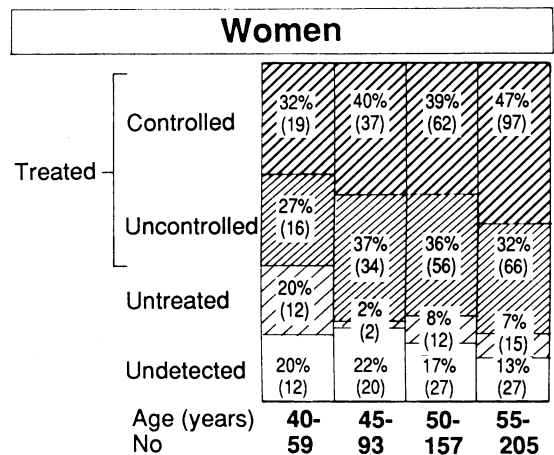
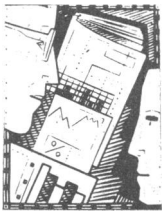


FIG 4—Rule of halves in hypertensive women in Scottish heart health study by age group

The detection and management of hypertension was also assessed according to recent recommendations of the British Hypertension Society.<sup>8</sup> Treatment of hypertension is not normally recommended after only two readings on a single occasion so to allow for this we increased the cut off point for defining hypertension from 100 mm Hg to  $\geq 105$  mm Hg diastolic pressure but used the suggested target for treatment of 85-90 mm Hg diastolic pressure. Figure 2 shows the results. There were 561 (11%) hypertensive men and 514 (10%) hypertensive women in the study population with a quarter (142) of the male hypertensive population and 42% (215) of the female hypertensive population having their hypertension adequately controlled. The percentage of hypertensive men with undiagnosed hypertension fell from 49% to 26% between the youngest and oldest age group, and that of men with hypertension diagnosed who were treated rose from 65% to 96%, with fewer than half being treated satisfactorily at each age (fig 3). The percentage of the male hypertensive population satisfactorily treated rose from 15% (10/66) in the 40-44 age group to 33% (74/227) in the 55-59 age group. The percentage of hypertensive women with undiagnosed hypertension was much smaller than that in men, at around 20%, with less substantial effect of age (fig 4). The percentage of treated hypertensive women was higher than that for men, and that of hypertensive women in the population satisfactorily treated rose from 32% (19/59) in the youngest age group to 47% (97/205) in the oldest.

### Discussion

A substantial proportion of the men and women aged 40-59 recruited as representative samples from 22 Scottish districts may be considered to be hypertensive,



irrespective of the definition used. Given that the mean readings were based on the mean of two recordings at one time, the higher diastolic cut off point may be considered more realistic. Again, irrespective of the definition used, a high percentage of subjects with raised blood pressures were untreated, and, similarly, in a high proportion of those treated hypertension remained uncontrolled.

Two recent surveys have suggested that the rule of halves might still apply in the United Kingdom.<sup>11</sup> The Scottish heart health study has provided the data required to make up the rule: on awareness, blood pressure, treatment, and control. It is quite striking how closely the rule of halves applies to men in this study. The rule means that only 13% of the male hypertensive population in Scotland is treated and its hypertension controlled. It may overestimate the hypertensive proportion in that some subjects with increased blood pressure on one occasion may have pressures lower than the cut off values at a subsequent measurement. The WHO criteria for defining hypertension predated the randomised control trials of the treatment of mild hypertension, and, though the rule of halves is a useful measure for international comparisons, it is no longer appropriate as an assessment of the detection and management of hypertension in the United Kingdom. It shows that control of blood pressure in Scotland is comparable to that in the United States in the 1970s before major campaigns were launched there to improve it.

We analysed our results according to the British Hypertension Society's recommendations with a higher cut off point of 105 mm Hg diastolic pressure as our data were based on two readings at one time. Systolic pressures were ignored, and the treatment target of 90 mm Hg diastolic pressure was used. The results in figure 2 show substantial differences between men and women in the detection and management of hypertension and a large effect of age, particularly in men. The percentages of hypertensive men and women not receiving satisfactory treatment by those current criteria are 75% and 58%.

The possible explanations for this sex difference include a higher frequency of contact with general practitioners by women and their better compliance with treatment. The effect of age in women was much

less pronounced than in men but probably reflects the frequency of general practitioner consultation in each age group and results from detection based on opportunistic screening.

The management of hypertension at a community level in Scotland, based on our finding, is not satisfactory. The standard of general practice in Scotland is generally regarded as being high, with practice sizes below the British average. The success rate in case detection, treatment, and control could all be improved. The situation is better in women than in men, with poorest control of hypertension in men in the younger age groups. Some studies have shown that detection, treatment, and control of hypertension in the United Kingdom can be improved.<sup>12</sup> Our findings have implications not only for managing hypertension but also for other conditions such as altered blood cholesterol concentration, whose measurement is being done either opportunistically or selectively, based on knowledge of other risk factors.<sup>13</sup>

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## Audit of terminal care in a general practice

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### Abstract

**Objective**—To determine satisfaction of relatives and general practitioners with care of patients during terminal illness and make recommendations on improving terminal care in general practice.

**Design**—Interviews with available relatives of patients who had had terminal illnesses and died in 1987, supplemented by questionnaires; questionnaire survey of general practitioners after review of case notes of all their patients who had died of terminal illnesses in 1987.

**Setting**—One urban general practice.

**Subjects**—34 Relatives of patients with terminal illnesses who died in 1987; five general practitioners from one practice.

**Results**—In six cases relatives were dissatisfied, mainly because of lack of communication; in eight cases doctors were dissatisfied because of com-

munication, poor symptom control, and inadequate care.

**Implications**—There is a need for improved communication between relatives and the health professionals involved in terminal care as well as better advice on services and benefits available to both patients and relatives. Bereavement counselling should be better organised.

### Introduction

Terminal illness is generally recognised to be the final phase of a disease process, when the advent of death is certain and treatment becomes palliative rather than curative. Most general practitioners now regard terminal care as important, and many work to improve their knowledge and skills with further reading and by attending courses. In a questionnaire

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