Hypertension
Community control of high blood pressure

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THIRD EDITION
To Mary, Robin, Rachel, Ben and all the people of Glyncorrwg

The inquisitor: They say it is their mathematical tables and not the spirit of denial and doubt. But it is not their tables. A horrid unrest has come into the world. It is the unrest in their own brains which these men impose on the motionless earth. They cry, ‘the figures compel us!’, but whence come these figures? They come from doubt, as everyone knows. These men doubt everything. Are we to establish human society on doubt, and no longer on belief?

Bertolt Brecht – Leben des Galilei
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By any definition – and there are many of doubtful validity – hypertension is a common malady. It is also much in the public eye. In fact it is widely publicized in the United States as ‘the silent killer’, a title which adds greatly to the discomfiture of the patient. Naturally, therefore, there are many books by doctors dealing with either the condition as a whole or aspects of it. This book by Dr Julian Tudor Hart is the only one I know written by a primary care physician or family doctor for his colleagues. Since this is essentially a malady for family doctors this is a timely work.

The reader would expect the author to deal with the intellectual and technical aspects, such as causes, measurement of blood pressure and treatment. These things he will also find in other books, although perhaps not so lucidly expressed or so well balanced as here. What is, however, unique about this book is the account of how to manage the condition by a practitioner who is responsible for the whole field of human disease. In other words, how a generalist (be he physician or family doctor) can organize himself, his staff and his patients so that medical care can be of the highest efficiency and greatest efficacy. In doing this, Dr Tudor Hart shows unusual insight into patient behaviour. It is, of course, on such doctor-patient relationships that effective management depends. For the essential cause of failure of treatment is that in the early stages the patient feels perfectly well, and resents the nuisance of a regime which often makes him feel unwell. Avoidance of unnecessary restrictions, the choice by the doctor of the least unpleasant pills and an understanding by the patient of what the issue is for him are essential components of successful compliance.

Some years ago I wrote an obituary of that great Wensleydale practitioner, William Pickles. I quoted this from his work:

And as I watched the evening train creeping up the valley with its pauses at our three stations, a quaint thought came into my head and it was that there was hardly a man, woman or child in all those villages of whom I did not know the Christian name and with whom I was not on terms of intimate
friendship. My wife and I say that we know most of the dogs and, indeed, some of the cats.

I would like to quote this from Dr Tudor Hart’s book:

For the past 18 years I have given day to day care to, and lived my own life among, a stable community of 1400 men and women of 20 years and over, for every one of whom I have known the mean of two or more casual pressures. From this I have learned that there is no feature of personality, physique, or other outward sign, that gives any clue to the pressures found on measurement. If psychosocial factors are important in determining blood pressure (and they probably are) they are too complex or remote in time from their consequences to be evident to observation alone. Such experience makes one impatient with simplistic hypotheses and single causes.

One of the most encouraging features of contemporary medicine in Britain is that the leaders of family doctors exhibit such wisdom and affection for their patients. It is a pleasure for an elderly physician like me to welcome younger men of such promise as Dr Julian Tudor Hart.

Sir George Pickering
1980
Foreword to the Third Edition

As you will have read, my old chief George Pickering was very generous in his Foreword to the first edition, for it has to be said that this book was then in its way a real rival to George Pickering's own book *High Blood Pressure*. Both were written by a single author, both used good English and both authors knew what they were talking about.

This new edition, like that first edition, is a very good read. As well as GWP's book it reminds me of Paul Wood's cardiology classic. All three are based, not on a re-hash of what went before, but on carefully gathered observations of well-organized practice, tempered by wide knowledge of the literature. Dr Tudor Hart's book is a truly scholarly work. In his Preface he says that this will be his final edition, since he has now retired. Personally, I doubt this. I hope that in a few years' time he will be able to give us a perspective on what is happening now in the newly re-organized National Health Service, since his book is full of sound common sense about how the health service should be organized, and I sense that, although he may approve of some of the new developments, he by no means approves of all. This is a very personal book, and well up-to-date with accounts of the recent big trials particularly in elderly patients - the SHEP, STOP and MRC elderly trials.

It is appropriate that a book on hypertension should be written by a GP, for they have a much more balanced and general view about how to treat this common and far from benign condition. We in hospital practice get a rather distorted view of what is happening to the totality of hypertensive patients. However, hospital practice cannot be all bad, for I found very little to quarrel with in this book. There are very good reviews on diagnosis, aetiology - particularly environmental influences - and on treatment. All the references to others' work are peppered with personal experience and numerical data from his remarkable 20 year studies on his own practice. George Pickering compares him to the Yorkshireman, William Pickles. In the same manner, Julian Tudor Hart's love and concern for his patients in Glyncorrwg, over the whole of his professional lifetime, is an inspiration to everyone in the National Health Service.
The book finishes with practical appendices which will be particularly helpful to the new generation of GPs, many of whom have the same ethos, and desire to run a well organized practice, as Dr Tudor Hart.

It would be a mistake to assume that because this is written by a GP it is a book for GPs. It is a book for all doctors and not just for those who are interested in hypertension. In these days of monster multi-contributor works, students, GPs, and hospital physicians should have this book on their shelves.

Peter Sleight
Field-Marshal Alexander, Professor of Cardiovascular Medicine
University of Oxford
Preface

I am grateful to Radcliffe Medical Press for undertaking a third edition, 13 years after the first. As I have now retired from responsibility for day to day patient care, it will be the last. It has again been completely rewritten, incorporating much more practical material from experience of caring for a defined population from 1961–87, with virtually complete ascertainment and follow-up from 1968–92.¹

I hope it will be useful to a wide range of people concerned with primary care, including medical students and general practice trainees, as well as established practitioners, practice nurses running hypertension follow-up clinics, practice managers, consultants concerned with the interface between primary and secondary care, and Family Health Service Authority administration staff with responsibility for developing ‘health promotion’. This may seem an impossibly wide audience, but because this book deals with real experience of patient care, I think most of it will be useful and accessible to them all. If we believe in team care, based not on blind obedience to either doctors or managers but on all members learning from one another, why not team books? This has required more comprehensive treatment, so that each chapter can be read on its own. A practice manager, for example, might want to read only the chapters on screening and records, and Appendix 1 (educational leaflet for patients). This means that some points have had to be repeated, although most require some reinforcement. This has made this edition much longer than the last, although I hope a much better work of reference.

Clinical management in primary care requires different skills, deployed in different circumstances from those in hospitals, particularly teaching hospitals. All family doctors have experience of work in hospitals, but few consultants have had responsibility in general practice. As Dr Gareth Beevers rightly observed in his review of the first edition, clinical medicine comprises one single and consistent body of knowledge. From this he wrongly concluded that there was no need for books by and for GPs, although he generously noted that any consultants who read mine ‘would, secretly, learn something’. There is indeed only one
mountain of knowledge, but the belief that everything can be seen and understood from the top of it is illusory; the view from above differs from the view from below, and the two approaches require different guides.

The first edition had a short section on high blood pressure in pregnancy, which was dropped from the second edition. There have been important developments in understanding and treatment of this disorder, key references to which are given below.²⁻⁷ It still seemed sensible to exclude this topic, of which I have little experience.

Julian Tudor Hart
Gelli Deg
Penmaen
Swansea

References


Neither treatment nor understanding of the causes of high blood pressure have changed fundamentally since the first edition of this book in 1979. There have been incremental advances on most fronts, but nothing dramatic. What really has changed is appreciation of the size of the task, and the impossibility of dealing with it only through hospital based specialists. Because high blood pressure is normally an asymptomatic condition, some form of systematic population wide screening or case finding with follow-up is essential.

It is now generally accepted that management of uncomplicated high blood pressure implies continuing care of some sort (with or without medication) for between 10 and 30% of the adult population. The problem is greater in older and poorer populations, and less in the younger or more affluent. The sheer size of the problem precludes routine management in hospital clinics.

Continuity and a personal approach are now generally recognized as essential for good control and minimal drop-out, and these should be easier to provide at the centre of a community than at its periphery. We have come to accept a curiously inverted terminology in this respect, regarding district hospitals as more central than primary care, and tertiary super-specialist hospitals as more central still, and may ask: central to what and to whom? That depends on where we think life really goes on.

It is now also generally accepted that high blood pressure is rarely an isolated risk, and cannot be effectively managed as though it were. It is nonsensical to ignore or refer outside the primary care team the routine management of associated cardiovascular risks such as smoking or glucose intolerance, which also require generalist rather than specialist skills.

Finally, there is consensus agreement, at least in theory, that management of high blood pressure should begin, not with antihypertensive drugs, but with other measures to reduce either blood pressure itself, or its consequent risks.

I say these advances are 'generally accepted', but what does this actually mean?
SIZE AND SHAPE OF THE TASK

Just as most people are content to celebrate on the sabbath a code of ethical behaviour they ignore for the rest of the week, advances in whole population care may be used more as a guide to right answers for examinations than as useful and necessary standard medical practice. When Whitfield and Bucks\textsuperscript{1} asked GPs in the Bristol area, only 45\% said they would always accept responsibility for management of moderately high blood pressure in the diastolic range 110–120 mmHg. Full acceptance of responsibility was not associated with age, so it was not just a matter of replacing tired old men with energetic young ones.

The Rule of Halves

Studies of what general practitioners (GPs) actually do, as opposed to what they say or know, have been even more damning. The Rule of Halves\textsuperscript{2, 3} is alive and well, at least in the UK.

- Half the people with high blood pressure are not known.
- Half those known are not treated.
- Half those treated are not controlled.

As an order of magnitude, the Rule still held in the North East of Scotland in 1984–6 for men aged 40–59 years\textsuperscript{4}.

Figure 1.1 maps the consequences of hypertension, and of its still frequently neglected control, in England and Wales\textsuperscript{5} and in Scotland. It shows a roughly threefold variation in the burden on both patients and health workers, which broadly parallels every other kind of social and economic disadvantage. Between 1961 and 1981, professional men in England and Wales enjoyed falls in mortality of 79\% for hypertensive disease, and 60\% for cerebrovascular disease. In contrast, the mean falls for semiskilled and unskilled men were 56\% and 15\% respectively\textsuperscript{6}.

Ascertainment and management of high blood pressure evidently improved, but advance was, as usual, greatest where needs were least and care was most comfortable\textsuperscript{7}. The Glasgow Western Infirmary’s acute stroke unit admits about 300 unselected patients a year from a catchment population of 220 000. In 1992, of 351 patients with information on antecedent diagnosis and treatment, 132 had previously diagnosed hypertension but only 62 of these (47\%) were receiving antihypertensive medication: of 58 aged under 70 years, only 27 (also 47\%) were medicated\textsuperscript{8}.

Ascertainment and management have improved. The situation was worse when I reviewed it in 1987 for the second edition, and worse still in 1979 when I wrote the first. Throughout those years the average number of staff employed by UK GPs remained virtually unchanged, at 1.2 whole time equivalent staff per principal\textsuperscript{9}. Teamwork, the key to effective care of populations, remained sabbath rhetoric, not everyday practice.
NHS 'Reform' and the 1990 Contract

The recent 'reform' of the UK National Health Service is typical of a worldwide abdication from co-operative public service and retreat to competitive marketed care, masked by accelerated advance toward rational health promotion. The 1990 GP Contract, by linking practice income with 'health promotion' clinics and 3-yearly 'health checks', pushed many practices into activity. In West Glamorgan, before the 1990 Contract there were only about 10 'health promotion' clinics a week, other than antenatal or children's clinics; less than a year later there were 315, roughly one for each GP. In England, 94% of practices were running health promotion clinics by the end of the first year of the contract, and by 1991 the average was about two per practice. For all of these, high blood pressure was the favourite target.
The 1990 Contract paid for the first time for proactive care of populations, requiring a population approach, with more staff and more delegation of work. By 1991, three out of four practices had a practice manager, and 88% employed one or more practice nurses.

Before the 1990 Contract, a study of 14 training practices\textsuperscript{11}, of which nine employed a practice nurse and five did not, showed no difference between the with-nurse and without-nurse practices in the proportion of patients over 40 years with blood pressures recorded during the preceding 5 years (about 50% in both). This showed that measurements were not being delegated. Numerous studies have established that nurses, after suitable training, are usually able to measure blood pressures more accurately than doctors\textsuperscript{12}.

The many GPs I know who shared this passivity all had the same excuses; they hadn’t enough time to read books or original papers, or to reorganize their practices to make full use of available skills. Many doubted the capacity of nurses to perform simple diagnostic tasks or to take clinical decisions, and most denied the value of standard protocols or algorithms for management of uncomplicated cases. Now the Contract appears not only to have solved all these problems of undertreatment at one stroke, but replaced them with new problems of reckless intervention, already familiar in the USA. Many ‘health promotion’ clinics now seem to be supervised almost wholly by practice nurses, with hardly a doctor in sight, although serious in-service education of these nurses for more or less autonomous decision making has (at the time of writing) scarcely begun in most areas.

Anglo-American Contrasts

The Rule of Halves, first described in the USA in the early 1970s, had disappeared there by the 1980s, at least in insured populations, for two reasons.

First, there was an energetic national campaign of professional and public education, led by outstanding, nationally known specialists and backed by campaigning public organizations. American cardiologists, for example Oglesby Paul, Paul Dudley White and Jerry Stamler, had a long and honourable tradition of public leadership. Their popular approach still seems inconceivable to most of their peers in the UK. Our gentlemanly tradition seems to have led to disbelief in the intelligence and educability of ordinary people.

Secondly, in the USA activism was accelerated by dollars. In their system of state subsidized private insurance, medical activity generated fees; in our salary and capitation based National Health Service, it generated taxes. Excessive displays of clinical energy were expensive to the exchequer, and difficult for family doctors who were unwilling either to employ a full team or to share responsibility with it. Restrained by capitation rather than spurred on by fees, UK GPs tended to maintain income through permanently excessive work-loads, so that
consultations were too short to get beyond satisfaction of wants, towards an active search for needs.

Means and Ends

Encouraged by this evidence that incentives do motivate, policy planners have pushed NHS practice towards that in the USA. If process is paid for, process will be obtained. The trouble is, medical science ultimately concerns not process but outcome, not means but ends. Will more health promotion clinics or health checks mean better care, and therefore fewer heart failures, strokes, myocardial infarctions, and premature deaths?

We do have some evidence that process can safely be used in this way as a proxy for outcome. In all industrialized countries, even with the generally inadequate care provided since large scale treatment of high blood pressure became possible in the late 1950s, first malignant hypertension, then acute left ventricular failure, once fairly common events, became rarities. Both were usually consequences of years rather than months of neglect of severe but often asymptomatic high blood pressure. Neglect on that scale is now unusual. One way or another, most severe cases get recognized, by accident if not by design, because arterial pressures are measured more often, not only by GPs, but by insurance doctors, hospital staff, in antenatal clinics, in chemist’s shops and even in airport waiting lounges. In a fumbling way, most of these worst cases get treatment somehow or other, before an artery blows or a kidney fails.

This suggests that the saturation approach popular in the USA may work; if enough blood pressures are measured, however indiscriminately, most potential patients will eventually be identified. From 90 mmHg of diastolic pressure upwards, American doctors have established a threshold for treatment. Not surprisingly, this not only reveals more high blood pressure, but generates a larger clientele.

At least one-third of American 60-year-olds with access to medical care are currently treated with antihypertensive drugs\textsuperscript{13}. Using consensus American criteria (diastolic 90 mmHg) for mandatory medication of high blood pressure, between 15 and 30\% of the adult population actually need antihypertensive drugs, continuously maintained over remaining lifetimes of 20–50 years. Using consensus UK criteria (diastolic 100 mmHg), this proportion falls to about 10\%. Using the conservative interpretation of the original Veterans’ Administration (VA) criteria\textsuperscript{14} still advocated in this book (diastolic 105 mmHg in the absence of other major risks), it falls further to about 7\%, rising again to about 10\% if you add diabetics and others with specific indications for treatment at lower levels. In poorer or older inner city populations these proportions are all much higher.

All controlled trials have shown reductions in cardiovascular deaths for treated hypertension, even at moderate or borderline levels of pressure, but reductions
in deaths from all causes have been shown only for more severe hypertension, in the diastolic range 110 mmHg upwards, and in the elderly. A simple conclusion follows; that treatment of mild to moderate hypertension in middle age, with the antihypertensive drugs available when these trials were done (no large trials have yet included calcium channel blockers or ACE inhibitors) was, directly or indirectly, causing as many deaths as it prevented.

Is iatrogenic damage on this scale really possible? The sad truth is that even major side effects from commonly prescribed medication are easily missed if they are neither imagined nor looked for. For example, although thiazide diuretics were in mass use all over the world from the late 1950s, the first suggestion that they might cause erectile failure in men was not published until 1975; even then it was not generally noticed or believed. The effect was not confirmed or measured until 1981, when 16% of men in the MRC mild hypertension trial\textsuperscript{15} dropped out because of impotence in the first 12 weeks of treatment. Sexual failure has consequences contributing to chains of events which can easily end in death through accidents, violence, or the effects of depression on other otherwise non-fatal illness. This was a major, and occasionally lethal, side effect, following social rather than biological paths of causation, and therefore ignored by conventional clinical wisdom. We have been warned, but to little avail; as I write this, there has still been no published research into the effects of thiazide diuretics on sexual experience in women.

A further example comes from attempts to control blood cholesterol levels by medication rather than dietary change, a subject closely linked with blood pressure control because there are usually associated risks for coronary disease.

Subjects randomized to cholestyramine in the American Lipid Research Clinics Program trial\textsuperscript{16} had 38% fewer fatal and non-fatal cardiovascular events than those randomized to placebo. This result was quickly made known and almost universally accepted as significant. Little attention was paid to a simultaneous 175% increase in non-cardiovascular deaths in the treated group, mainly from accidents, violence, and homicide. As in the MRC trial\textsuperscript{17}, there was no net reduction in deaths from all causes. These deaths appear to have been related to medication rather than cholesterol level itself\textsuperscript{18}. In the absence of further evidence, we can account for these results only by accumulation of perhaps small impairments in concentration, reaction time, or emotional control, applied to large numbers over prolonged time.

**Size and Sign of the Gross Medical Product**

On present evidence, we should assume that similar results are likely for other attempts at indiscriminate mass chemical engineering, unless and until proved otherwise by large scale randomized trials, with suitable attention to effects on all causes of mortality, not just cardiovascular mortality. According to a *Lancet*
editorial19 which has not been challenged, medication side effects are undetectable by the usual premarketing trials if they occur in less than 1% of cases. Only very large trials in free living populations, using medication in the ways that are probable under ordinary conditions of practice, can even begin to answer these questions. As these and many other examples20 show, even then we tend to see and hear not what is there, but what we, or more importantly, what shareholders in the pharmaceutical industry, want to see. In the absence of evidence, our default mode remains chemical intervention, not behavioural change.

Doctors and nurses in primary care should and do worry about reckless development and promotion of mass medication. Most people in the generally well fed and housed populations (at least by world standards) of developed economies reach old age before they die. There is therefore little scope in these areas now for large effects on mortality through advances in medical care. For mortality, but not for morbidity, the entire medical enterprise cannot have a large positive net product, although that is not to say that the small advances actually possible are not worthwhile.

From this it follows that if clinical processes are applied on a mass scale by numerous small units which cannot pool their experience, small risks multiplied by large populations, and multiplied further by years of sustained medication, may easily and imperceptibly transform marginal net gain to marginal net loss. In terms of mortality at least, the gross medical product may be not just small, but negative.

Constructive Doubt

People reading this book are actual or potential innovators. To change the still generally bad situation they are likely to find in all but the most affluent practice (and even there I am suspicious), they need all the motivation, optimism and enthusiasm they can honestly get, and this enthusiasm needs to be shared by their patients. Primary care for ordinary people is hard, time consuming, and physically and emotionally exhausting work, which cannot be sustained on romantic illusion.

With experience, clinical activism is sustainable only in one of two diametrically opposed ways. One is to seek, and eventually find, evidence of real benefit to patients’ health. If no such evidence can be found, processes must be changed, even if this means recognizing previously valued skills as obsolete, and undertaking even more work to acquire new skills that are relevant. It is a hard road of permanent scholarship and experimental science through the cycle of audit, without the social resources usually considered essential for disciplined academic work.

The other way is to assume that clinical processes are safe proxies for health outcomes, and then ensure that they are performed as often and efficiently as the
market will stand. So long as we always do what everyone else does, and never do anything that everyone else does not do, what can usually still pass for clinical conscience is satisfied, and rewards may be high.

In clinical medicine, economic motivation is worse than none at all, because means then become ends. Tinkering with human machinery is difficult and dangerous enough in any circumstances; entangled with economic motives, we can neither be trusted nor trust ourselves.

### Blood Pressure Control as a Model for Continuing Population Care

Previous editions of this book have encouraged practice teams to view control of high blood pressure in whole registered populations as a pilot model for continuing care of other chronic or recurrent problems. Experience has confirmed that this was useful.

Blood pressure control in the community, although not easy, is a much simpler task than (for example) control of nicotine or alcohol dependence, diabetes, schizophrenia, epilepsy, or airways obstruction. All effective primary care is essentially continuing rather than episodic, requiring thought not only about immediate symptoms and presented problems, but for anticipatory care. Not only the management of high blood pressure, but all effective primary care, depends on continuing personal relationships between patients and professionals, through which patients need help to move from roles as passive consumers to active producers of their own health.

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Size and Shape of the Task


Nature, Mechanisms and Causes of Primary High Blood Pressure


Secondary High Blood Pressure


Iatrogenesis


Natural History and Complications


Thresholds for Follow-Up and Medication


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Management Without Medication


Management Without Medication


Antihypertensive Medication in General

Specific Antihypertensive Drugs


Refractory and Complicated Cases, and Hypertensive Emergencies


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High Blood Pressure in Childhood and Adolescence, and the Origins of Adult Disease in Childhood


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**High Blood Pressure in Young Adults**


High Blood Pressure in the Elderly


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