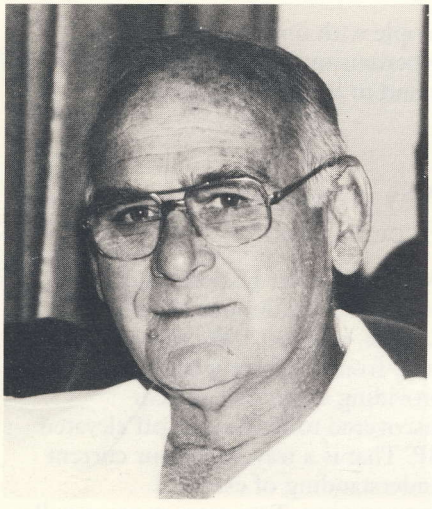
Home thoughts on hypertension

– Ronald Ingle



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Curriculum vitae

Ronald Ingle was born in China, the son of a Baptist missionary who was Professor of Surgery at Cheeloo University (the first to translate Gray's Anatomy into Chinese). He graduated in Britain. In 1958, after 5 years in the Royal Air Force, firstly as a Station MO in Malaya, then in surgery in the UK, he joined the USPG Anglican missionary society and was sent to All Saints' Hospital in Transkei to join Dr Pauline Marshall. They married in 1960 and remained at All Saints' until 1976. He went to the new Transkei's Department of Health to be the first Chief MO for Primary Care and subsequently Deputy Secretary for Health. In 1985, after 3 years as a Tuberculosis Officer in the Eastern Cape, he joined the Department of Family Medicine at Medunsa. He has held offices in the Transkei and Ciskei Association of Mission Hospitals, the Consultative Committee for South African Medical Missions, the Transkei and Ciskei Research Society and the South African National Council for Health Education.

Summary

This article presents insights into the field of management of hypertension, and provides a practical management protocol which could improve the level of care to the individual patient as well as to the community.

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KEYWORDS:
Hypertension; Blood Pressure; Drug Therapy

I used to think hypertension was straightforward – hypertension was a reading over 140/90, and there were the drugs. But no longer.

My purpose is to share insights which I am sure are crucial to the whole question of managing hypertension.

Hypertension is a risk factor not a sickness

The first insight concerns the very definition of hypertension. Definitions depend on the purpose for which we need them. To start with, blood pressure (BP) is a biological variable, whose distribution among individuals follows a normal or Gaussian curve (Fig 1); we do not know why individual blood pressures vary. These normal distribution curves and their mean values are known to be "shifted to the left or right", lower or higher, for different communities (Fig 2); neither do we know why this is. As they shift to the right they may become "skewed" to the right, suggesting that an additional factor is increasing the proportion of people in the community with a relatively high BP. It is purely descriptive to say that X% of the population have a BP above X/Z.

Other ways of defining hypertension are:[1]

Clinical – Hypertension was first used by clinicians in describing ill patients with unusually high blood pressures.

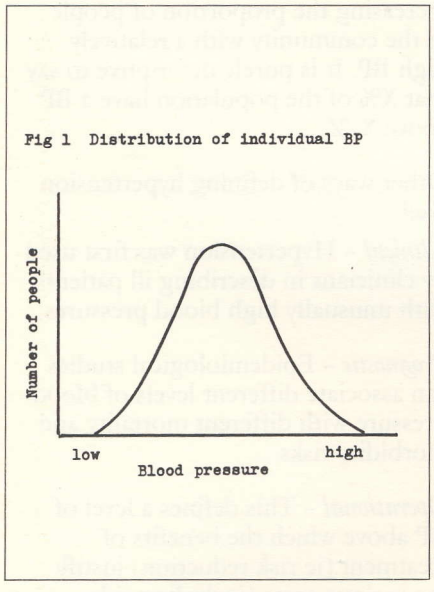
Prognostic – Epidemiological studies can associate different levels of blood pressure with different mortality and morbidity risks.

Operational – This defines a level of BP above which the benefits of treatment (ie risk reduction) justify the various costs (including side effects) involved.

It is the operational definition that should guide our practice. We, and our patients, must perceive essential hypertension as *a risk factor* whose ill effects lie in the future, and not a sickness causing, say, today's headache. Reflect on the difference in our own perception, and almost certainly our patient's, between his smoking and his mild hypertension – the former a bad habit to be given up sooner rather than later, the latter an illness which the doctor will treat now.

As Professor George Pickering rather caustically said:

> "Essential hypertension is that type of disease not hitherto recognised in medicine in which the defect is one of degree, not kind ... It is apparently difficult for doctors to understand because it is a departure from the ordinary process of binary thought to which they are brought up ... Medicine in its present state can only count up to two, and not beyond." [2]



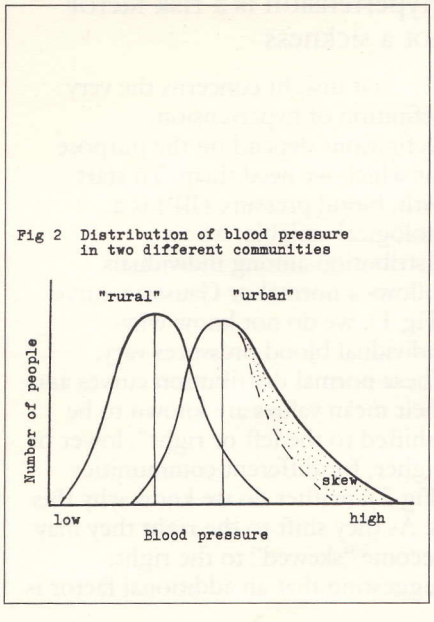
Overdiagnosis and "White Coat" Hypertension

The level of the blood pressure is literally the sine qua non of management. Obvious perhaps? And yet what little careful attention it receives! In these days when figures play such a large part in clinical medicine, we ought to know about the unreliability and bias involved in all measurement. "Only an observer who is aware of the factors that lead to false readings should measure blood pressure." [3]

> "The problems of ascertainment exceed even those of definition. Of all basic clinical measurements, blood pressure is one of the most difficult; yet, curiously, training and quality control are largely neglected."
>
> *G A Rose*[2]

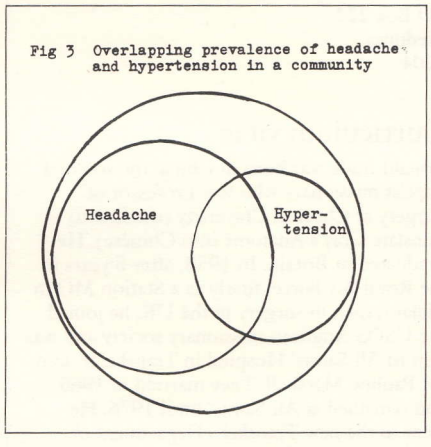
The most important of the variables which can be controlled are measurement technique (Boxed summary, Fig 4), the number of measurements made, the period over which they are made, and the place where they are made. Several measurements, especially on different occasions, reduce the uncertainty due to random error.[4] But a person's blood pressure, when subject to measurement, tends to fall spontaneously over a month or more, not only when measured at a health facility, but also when self-recorded at home.[5] Clearly this affects the assessment of baseline blood pressure and also the interpretation of responses to drugs if treatment is begun prematurely. These phenomena, resulting in overdiagnosis and overtreatment, have been called White Coat Hypertension. Using ambulatory recorders for 24 hours, 22% of 292 people with untreated borderline hypertension in New York were found to be normotensive[6]!

> Most is achieved in doing the simple things well



Why do we treat Hypertension?

We do not treat Hypertension because, like climbing Mount Everest, it is there. We must move away from the knee-jerk response of providing drugs to a patient discovered to have a one-off elevated BP. That is a travesty of our current understanding of essential hypertension. Two reasons are usually advanced for doing this: that the patient needs symptom-relief and that she might have a stroke after leaving the surgery. No studies show any significant association between symptoms and mild or moderate hypertension. Symptoms are associated with end-organ damage or severe "malignant" hypertension. One must recognise that headaches of various kinds are themselves common and mild or borderline hypertension is prevalent, so the chance of them coinciding independantly is high (Fig 3). The very small chance of a person having a vascular accident within hours of a consultation, would not



have been reversed by a dose or two of an antihypertensive drug. There is even evidence that aggressive anti-hypertensive treatment in the elderly may precipitate stroke.[7]

The reason, then, to begin to consider treating elevated BP is because a risk exists. But just how big is that risk? It is important for us – and, of course, our patients! – to appreciate that hypertensive patients may survive and remain well for years, and that normotensive people may have vascular accidents! This is shown in Table 1 with data from the Framingham Heart Study which followed 5209 men and women, aged 30 – 62 years at the time of their initial examination, for 20 years.

Table 1 Age-adjusted average annual cardiovascular Mortality per 10 000

	Men	Women
Normotensive	58	23
Hypertensive	155	74

The risk of stroke *during* anti-hypertensive treatment, is shown in Table 2, which is after data from the International Prospective Primary Prevention Study in Hypertension trial (IPPPSH)[8]. It means that 99 out of 100 people whose BP remained between 100 and 105 mm Hg were treated "unnecessarily".

Table 2 Stroke rates related to diastolic BP during treatment

DBP (mm Hg)	Strokes 1 000 patient-Years	Risk %
Above 115	50	5
150	13	1,3
100	7	0,7

It is not enough to think that we must begin a preventative regime because a risk factor has been identified. We need to know that anti-hypertensive regimes and the lowering of blood pressure will indeed reverse those risks. Although hypertension has been treated for a long time it is only recently that reliable information about what benefits can be expected is beginning to accumulate! It appears that, roughly speaking, treatment of mild hypertension reduces the risk of stroke by between one-third and one-half.[9] It is a pity it is not easier for researchers to make readily understood but true statements about such risks or, indeed, any risks! "User-friendly" ways of expressing benefit are beginning to appear in the literature. Thus, estimates of the benefits of treating hypertension vary from preventing 1 stroke per 850 low-risk[10] to about 50 high-risk[11] patients per year. I hope I have shown that it is by no means a simple contract that you offer, let alone explain, to your patient.

Hypertension is a risk factor; not a sickness

A protocol is a great help

A protocol is the result of a group of health workers adapting, with allowance for the resources they have, the best therapeutic information available to them into a documented management plan which they agree to follow among themselves for the time being in order to improve their average level of care to the population they serve. A management protocol for hypertension developed in the Department of Family Medicine at Medunsa appears in Fig 4.

Maurice King and his colleagues said of microplans, which are large-scale protocols dealing with, for example, organisation and supplies as well as clinical management:

> "Look on a microplan as a tool for improving health services and not a pair of handcuffs. Adapt or improve it in any way you wish. Microplans define minimum standards – do better if you can."[12]

My experience in rural Transkei, combining hospital work with the development of primary care, taught me that most is achieved by doing the simple things well, whether in emergency surgery, or clearing up impetigo, or immunisation coverage. That is why I believe protocol development is so important for us, whatever kind of health worker we are.

Only those who are aware of the factors that lead to false readings, should measure BP

Life-style changes for individuals and communities

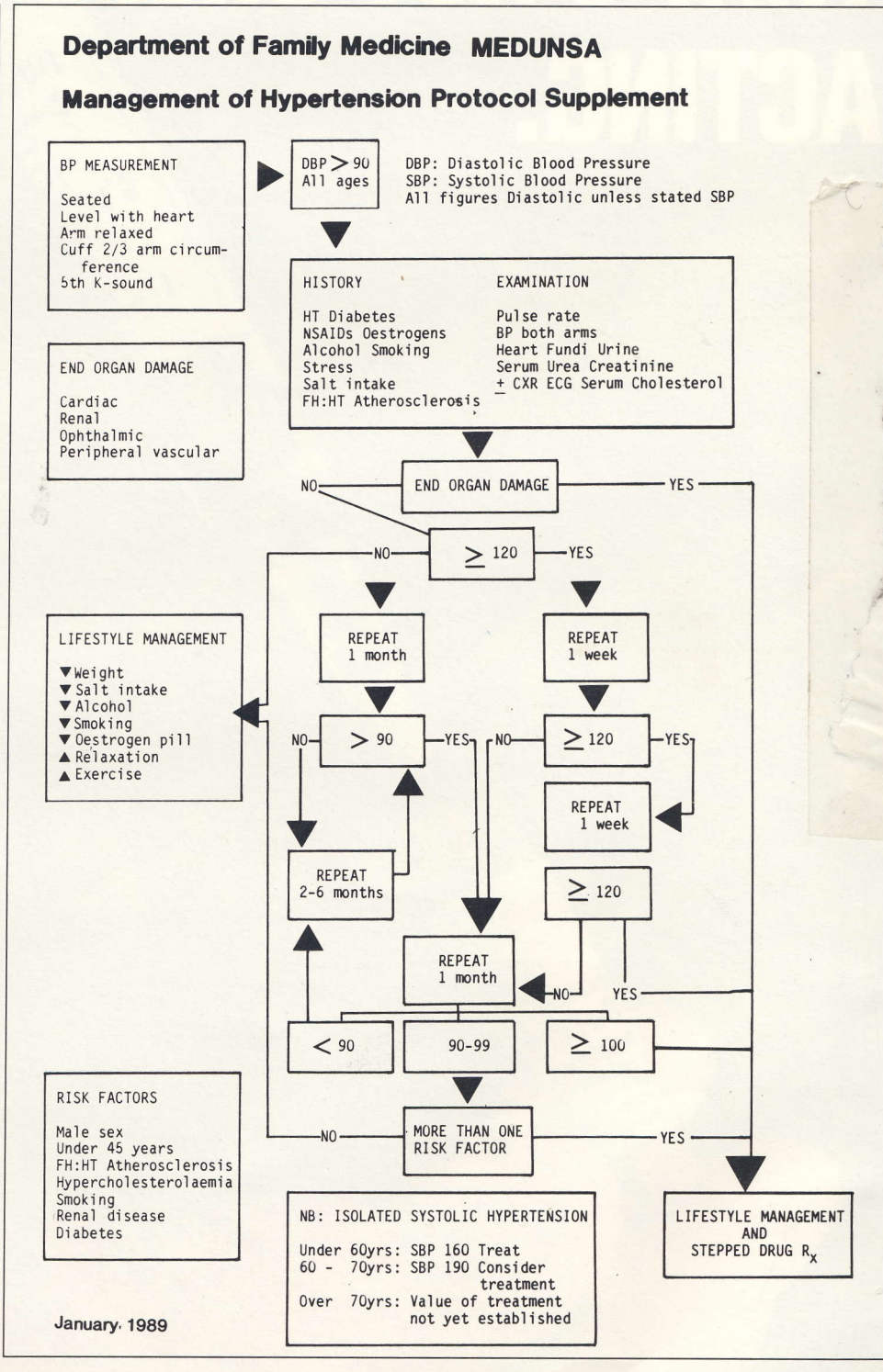
Drugs can, not always easily, reverse hypertension and, to some extent, its risks. But hypertension's association with various cardiovascular sequelae is not necessarily causal. Mild hypertension is better viewed as one ingredient of a composite cardiovascular risk profile.[13] Drugs do not reverse risk factors! It is one thing to help individuals with the

higher blood pressures and risk profiles, but to reduce the overall amount of cardiovascular sequelae is another matter because it is that larger proportion of people which has the lower risks that produces the most complications and deaths.[2] "The problem calls for major efforts in seeking to shift the entire blood pressure distribution curve to the left again by some non-pharmacological, primary preventive approach".[14]

Gear et al, and Opie have begun important discussions in South Africa on appropriate strategies for addressing this massive public health problem. [15,16]

Mrs Johanna Tseleng

Mrs Tseleng is an old-age pensioner living alone at Letlhabile, near Brits. This is where people from the Ou Lokasie at Brits have been "relocated". For two years she has been asking me to transfer her there because of expense. But the new health service Clinic there, where attendance now costs R2,00 still has no anti-hypertensive drugs. Her attendance at Garankuwa Hospital, including medicines, costs R5,00 and thankfully, despite the dramatic increases in hospital fees accompanying "privatisation", this is unchanged for her category. But her taxi fares to come cost R6,00 - total for the day: R11,00. Not much? Perhaps not. But her pension amounts to R100,00 per month; rent and services R23,00; Paraffin for cooking R6,00; which leaves R60,00 for food. Her BP before treatment, and without evidence of complications was 190/110. Considering how hard her life is, should I leave her believing that her medical expenses are inescapable? With the insights I now have, I do



... Hypertension

PERSONAL NOTES

TREATMENT WITH DRUGS : OUTLINE OF STEPPED-CARE

STEP 1 : DIURETIC

START

THIAZIDE 12,5 - 25mg dly

Care in diabetes, gout

Baselines Serum K, Urea Creatinine, Uric Acid, Glucose

NOTE:

Baselines are desirable not essential, subject to clinical judgement

STEP 2 : ANTI-ADRENERGIC

ADD

Peripheral — or — Central

BETA-BLOCKER

ATENOLOL 100mg dly

Cardioselective

Contraindicated in Asthma, CCF and peripheral vascular disease

METHYLDOPA

Begin 500mg nocte

Increase by 250mg dly on bd basis. Maximum 750mg bd

Contraindicated
Impaired liver function
Depression
Baselines LFTs

OR

RESERPINE

0,1 - 0,2mg dly

Contraindicated

Depression

NB: RETURN TO BETA BLOCKER BEFORE STEP 3

STEP 3 : VASODILATOR

ADD

HYDRALAZINE

Begin 20-25mg bd
Increase by 20-25mg dly
Maximum 100mg bd

HOSPITAL COSTS FOR 28 DAYS R_x (1988)

	mg		Rands
Prazosin	5	bd	14
Atenolol	100	dly	13
Propanolol LA	160	dly	12
Methyldopa	500	bd	9
Thiazide	25	dly	2,5
Propanolol	80	bd	2,2
Hydralazine	50	bd	1,7
Reserpine	0,2	dly	0,2

not think so. That is one reason why I have written this article.

Conclusions

* Hypertension is a risk factor and not a sickness.
* The epidemic of "white coat" hypertension is serious and much more preventable than the real one.
* The risks of hypertension are not necessarily reversed just because we have begun drug treatment.

My resolutions for patient-care

* To make better measurements of blood pressure
* To make better all-round assessment of my patient
* To explain "blood pressure" to my patients
* To be slow to start drugs, and to resist ill-advised pressures and expectations to do so.
* To achieve target BPs slowly but deliberately.
* To provide patients with a self-retained record and to update it.
* To ask patients to bring their pill packages with them at each visit to avoid misunderstandings and check compliance.
* To provide myself with a management protocol which is easy to refer to, and to use it.

References

1. Rose GA. Hypertension in the community. In: Bulpitt CJ, ed. Handbook of hypertension, Vol 6:

Epidemiology of hypertension. Amsterdam: Elsevier Science Publishers, 1985.

2. Pickering G. High blood pressure. 2nd ed. London: Churchill, 1968.
3. Petrie JC, O'Brien ET, Littler WA, de Swiet M. Recommendations on blood pressure measurement. London: British Medical Journal 1987; 3.
4. Armitage B, Rose GA. The variability of measurements of casual blood pressure. Clin Sci 1966; 30: 325.
5. Laughlin KD, Fisher L, Sherrard DJ. Blood pressure reductions during self-recording of home blood pressure. Am Heart J 1979; 98: 629.
6. Pickering TG, James GD, Boddie C et al. How common is white coat hypertension? JAMA 1988; 259: 225-8.
7. Jansen PAF, Gribnau FWJ, Schulte BPM, Poels EFJ. Contribution of inappropriate treatment for hypertension to pathogenesis of stroke in the elderly. Br Med J 1986; 293: 914-7.
8. IPPPSH Collaborative Group. Cardiovascular risk factors in a randomized trial of treatment based on the beta-blocker oxprenolol: International Prospective Primary Prevention Study in Hypertension. J Hypertens 1985; 3: 379-92.
9. British Hypertension Society Working Party. Treating mild hypertension: agreement from the large trials. Br Med J 1989; 298: 694-8.
10. Medical Research Council Working Party. MRC trial of treatment of mild hypertension: principal results. Br Med J 1985; 291: 97-104.
11. Amery A, Brixko P, Clement D et al. Mortality and morbidity results from the European Working Party on high blood pressure in the elderly trial. Lancet 1985; I: 1349-54.
12. King M, King F, Martodipoero S. Primary child care: a guide for the community leader, manager, and teacher. Book Two. Oxford: Oxford University Press, 1979:3.
13. Kannel WB, Stokes J. Hypertension as a cardiovascular risk factor. In: Bulpitt CJ, ed. Handbook of Hypertension, Vol 6: Epidemiology of hypertension. Amsterdam: Elsevier Science Publishers, 1985.
14. Wilhelmsen L. Cost-effectiveness. In: Bulpitt CJ, ed. Handbook of hypertension, Vol 6: Epidemiology of hypertension. Amsterdam: Elsevier Science Publishers, 1985.
15. Gear JS, Taylor DR, Pinkney-Atkinson VJ. Future strategies in hypertension. In: Milne FJ, Sareli P, eds. Hypertension and rheumatic heart disease in black South Africans. Johannesburg: Helm Publishing Co, 1989: 39-42.
16. Opie LH. The total costs and demands of treatment of hypertension in South Africa: contributions of drug costs, hidden costs and mass strategies. S Afr Med J 1989; 76: 85-8.