

Why we need a Hypertension Clinic in Auckland again (personal view)

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Mr AJ – 50 year old European male referred to nephrology clinic for advice on management of resistant hypertension of 4 years duration. Patient's chief concern – persistent ankle swelling

Regular medication

felodipine 10mg daily
quinapril 40mg daily
doxazosin 8mg BD
bendrofluazide 2.5mg daily
allopurinol 300mg daily
simvastatin 10mg nocte
aspirin 100mg daily
flixotide 125, 1 puff BD

Background

Overweight many years, lost 5kg in past 6 months

Gout

Mild asthma

Non-smoker, non drinker

OSA screening questionnaire negative

O/E 1.78m, 122kg – BMI 38, resting BP in both arms 168/84, 2+ ankle oedema

Available results on referral

Electrolytes normal, creatinine 132 $\mu\text{mol/l}$ (eGFR 50ml/min)

Urine microscopy clear

spot urine prot/creat ratio 30mg/mmol

Fasting glucose 5.8mmol/l,

cholesterol 5.8mmol/l, HDL 0.9mmol/l, triglyceride 2mmol/l

uric acid 0.4mmol/l

24 hour urine catecholamines normal

Active renin 66mU/L, aldosterone 239pmol

Vascular duplex ultrasound of main renal arteries normal
renal size normal

24 hour urine sodium excretion 130mmol

12-lead ECG normal

Chest Xray normal

24 hour ambulatory BP Awake average BP 160/78, asleep
average BP 148/74

On review of his records it emerges that he has been seen at general medicine, cardiology clinics previously (over past 3 years) where most of the special investigations were generated and his antihypertensive meds were increased and adjusted.

Beta blocker avoided because of asthma
Clonidine patch caused severe headache
Diltiazem caused severe constipation

GP still principally concerned about BP, but nephrology referral made on pretext of creatinine 132umol/l and microalbuminuria

How should he be managed and why has it taken so long to sort him out ??

Results of an informal survey of a few Auckland GP's..

- not easy to get advice on investigation and management of difficult or resistant hypertension
- referrals are sent to general medicine, cardiology, or nephrology or diabetes
- waiting time longish and quality of advice offered variable
- all GP's have a group of patients with long-term poorly controlled hypertension
- some GP's have lost enthusiasm for seeking advice and struggle on their own

...as a result clinic referrals for difficult hypertension have slowed to a trickle

Symptomatic of this GP malaise...

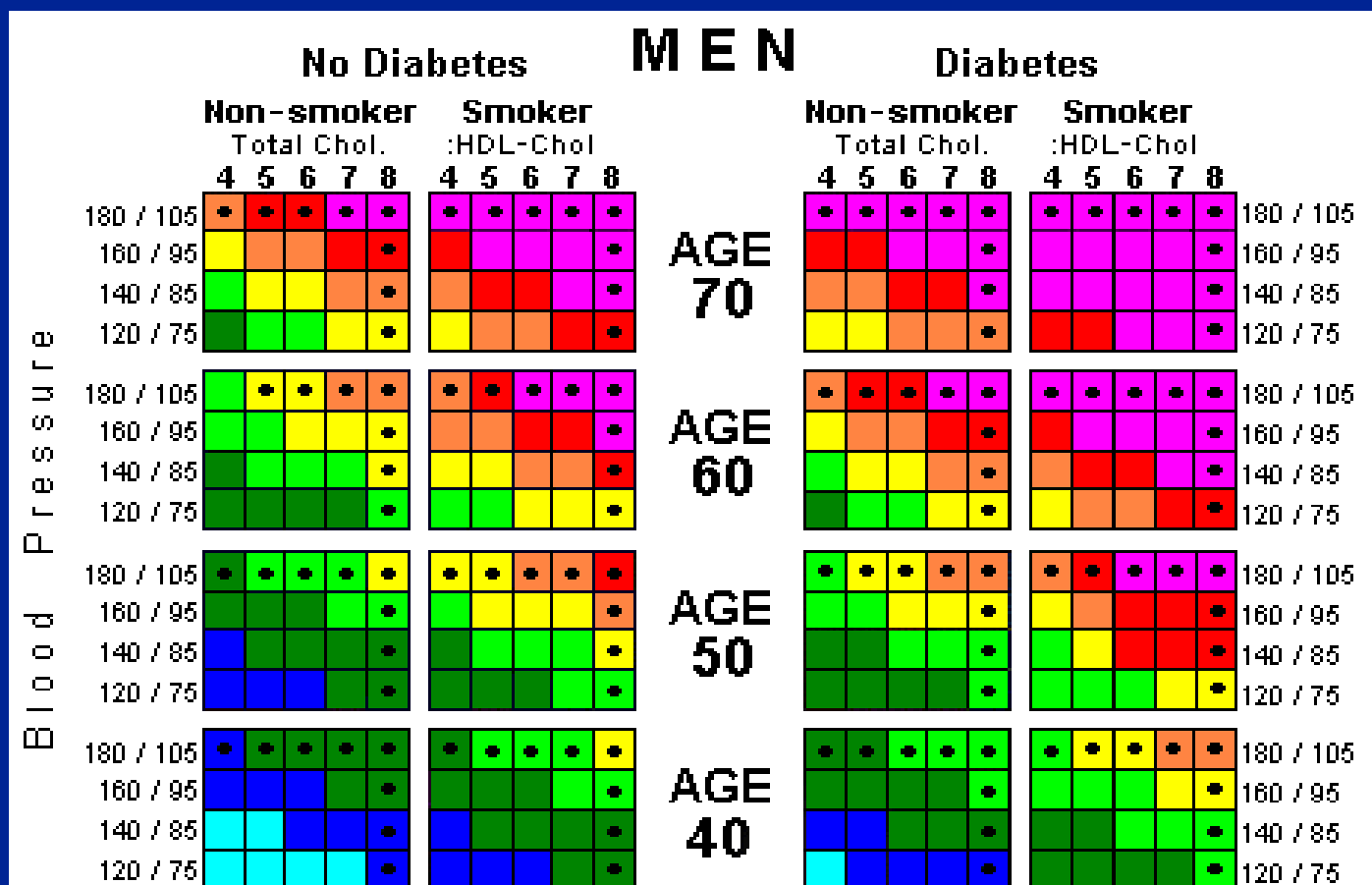
Dr Matt Dawes in the cardiology Dept is interested in hypertension and sees some of the referrals with difficult hypertension sent through cardiology (perhaps this service is not common knowledge among GP's?)

...Matt is only getting ~ 1 referral a month

ie the ice-cube on top of the tip of the iceberg

What do GP's want?

Is the current "model of care" wrong?



EVIDENCE-BASED
BEST PRACTICE
GUIDELINE

THE ASSESSMENT
AND MANAGEMENT OF
CARDIOVASCULAR
RISK



DECEMBER 2003

“Heart attack Top doctors rate **your** risks”

NZ Listener 14 June 2008

Stress

Cholesterol/ Statins

Overweight/ Diet -exercise

Smoking

(blood pressure)



- Continuum of increasing CV risk from SBP 115mmHg
- CV mortality doubles for every 10/5 increase in BP > 120/70mmHg
- High BP causes
 - 35% of all cardiovascular deaths
 - 50% of all stroke deaths
 - 25% of all CAD deaths
 - 50% of all congestive heart failure
 - 25% of all premature deaths
 - commonest cause of CKD overall and commonest cause of ESRD in older individuals

High blood pressure affects about 26% of adult population

26% of (say) 3.8 million = 988 000

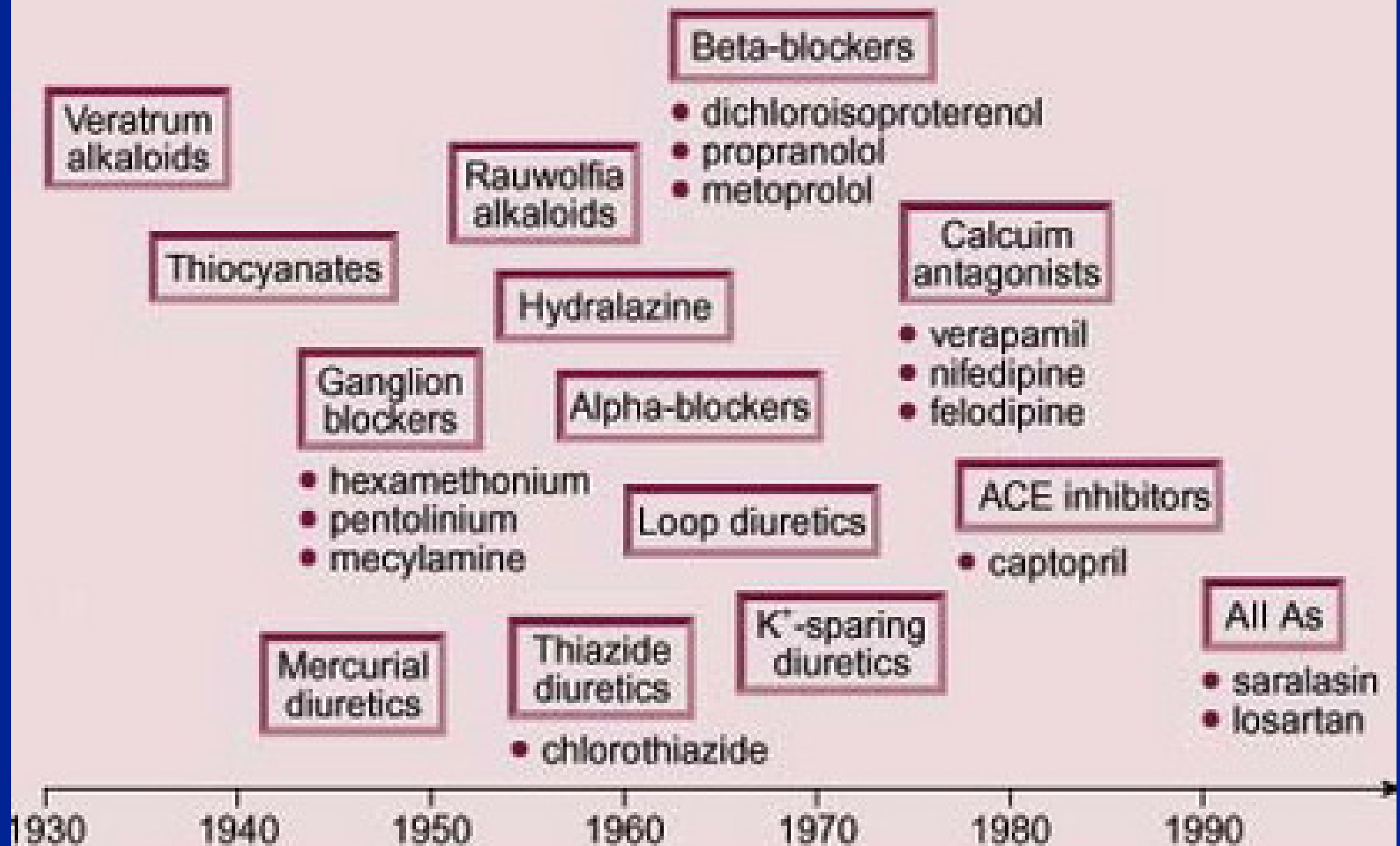
Even assuming all these were on treatment (up to 1/3 are probably undiagnosed) and a (highly conservative) 5% are not at target BP (more like 1/3)

5% of 910 000 = 49 400

That is: 49 400 NZ'ers with a preventable cause of premature vascular disease and death

“Those who cannot remember
the past are doomed to repeat
it”

George Santayana, philosopher
(1863-1952)



The VA Cooperative Study, 1967

Cohort	143 men
Mean age	51 years
Eligibility	Diastolic BP 115-129 mmHg
Design	Double blind; placebo control
Therapy	HCTZ, reserpine, hydralazine
Duration	1.5 years
BP change	-43/30 mmHg

HCTZ=hydrochlorothiazide

VA Cooperative Study Group. JAMA. 1967;202:1028-1034.

Slide Source
Hypertension Online
www.hypertensiononline.org

The VA Cooperative Study, 1970

Cohort	380 men
Mean age	50 years
Eligibility	Diastolic BP 90-114 mmHg
Design	Double blind; placebo control
Therapy	HCTZ, reserpine, hydralazine
Duration	5.5 years (mean=3.8 yrs)
BP change	Diastolic BP -19 mmHg

History of the Hypertension Clinic in Auckland

Started in early 1960's in old Huia Hospital (cnr Park + Grafton Rds) – Dr Graeme Campbell and later joined by Dr Kevin O'Brien

Drugs available then:-

Ganglion blockers, reserpine, thiazide diuretics, alpha blockers and hydralazine

Patients stayed at clinic for ½ day having multiple BP's checked (early drugs caused marked postural hypotension) and most decisions made on average BP for the morning. Many patients followed up for extended periods

1968 HTC moved to a large area on first floor of the new Auckland Hospital Building

Patients still stayed ½ day and many followed up long term

Additional drugs available:

Late 1960's – 1970's beta blockers, spironolactone, loop diuretics

1973 Dr Robin Briant returned from UK and joined the clinic

Many important drug trials conducted from the clinic

Patients were followed up for shorter periods and discharged once BP optimised

1970's – 1980's calcium antagonists, ACE-inhibitors became available

1985 Dr Graeme Campbell retired

1980's – 1999

HTC gradually downsized in space and time

Thought by some to have outlived it's usefulness,
GP's apparently managing hypertension effectively

Gradually absorbed into cardiology and eventually
shut down completely in 1999 on Dr Briant's
retirement

So what??

Clinical Trials since 1999 which have fundamentally changed hypertension management

ALLHAT (JAMA 2002) – basis of 2003 JNC-7 Guidelines

LIFE (Lancet 2002)

INVEST (JAMA 2003)

VALUE (Lancet 2004)

ASCOT (Lancet 2005))

HYVET (NEJM 2008)

ACCOMPLISH (in press 2008) – will be basis of JNC-8 Guidelines (out late 2008 or early 2009)

Guidelines

JNC-7 (2003)

British Society of Hypertension/NICE
(2006)

European Society of Hypertension (2007)

American Heart Association (2007)

JNC-8 (late 2008 early 2009)

New Drugs

Renin inhibitors, eplerenone, vasodilating beta blockers

Old drugs used in new ways

Spironolactone, chlorthalidone

New fixed dose combinations

ACE/ARB+CCB

ACE/ARB + CCB+thiazide

CCB+Statin

CCB + ARB + Statin

Currently topical issues in hypertension

Place of fixed dose combinations esp ACE/thiazide vs ACE/CCB

Beta blockers relegated to 4th-line treatment except where compelling indications

Place of ABPM and home BP monitoring

Chronotropic therapy for non-dippers and morning hypertension

Vascular and tissue-based aldosterone production and new paradigm for aldosterone antagonists in hypertension (esp resistant hypertension)

Drug treatment of prehypertension

Management of hypertension in the very old

New treatments for the metabolic syndrome

Hypertension and cardiovascular disease in ethnic minorities

Polypill

What benefits might a modern Hypertension Clinic Offer?

- Quick turnaround one-stop-shop for difficult cases from GP's
- Based around 2 or 3 interested clinicians and 1 or 2 nurse specialists / concentration of expertise + experience/ cheap to set up and run and "low tech"
- Valuable educational opportunity for physician trainees
- Outreach educational function with GP's and wider community / GP-based clinics a possibility
- Catalyst for hypertension-based research
- Review and update local guidelines
- Lobby government, Pharmac etc where appropriate about new drugs



Dr grades GP referral



Nurse arranges pre-investigations including ABPM if required and several quiet baseline BP measurements on a day prior to clinic appointment if possible



1 hour clinic review with Dr/ further investigations initiated +/-treatment changes made/ General CV risk including lifestyle issues reviewed



Fortnightly nurse-clinic visits to titrate medication increases according to parameters set by Dr until BP at target/ Further education on general CV risk and lifestyle issues + referrals to smoking cessation dietitian etc where appropriate



Final clinic review with Dr and discharge back to GP

Establishment of a Difficult Hypertension Clinic in Whangarei, New Zealand: An Review of the First Eighteen Months' Experience / Original Article

Walter van der Merwe

Abstract

A Difficult Hypertension Clinic was established at Whangarei Hospital, Whangarei New Zealand in March 2006 in response to a perceived need amongst general practitioners. The experience with the first 150 patients is reviewed. Mean BP at referral was 162/89, and mean number of antihypertensive drugs was 2.48. Mean BP at discharge from the Difficult Hypertension Clinic was 138/78 and mean number of antihypertensive drugs 3.16. The commonest cause of hypertension resistance was under-prescription of diuretics. Secondary or contributory causes of hypertension were identified in 28 (19%) of patients and White Coat Hypertension in three (2%). The Difficult Hypertension Clinic established in our hospital is an effective model for achieving clinical targets and care recommended in evidence-based guidelines.

150 new patients seen over 1st 18 months



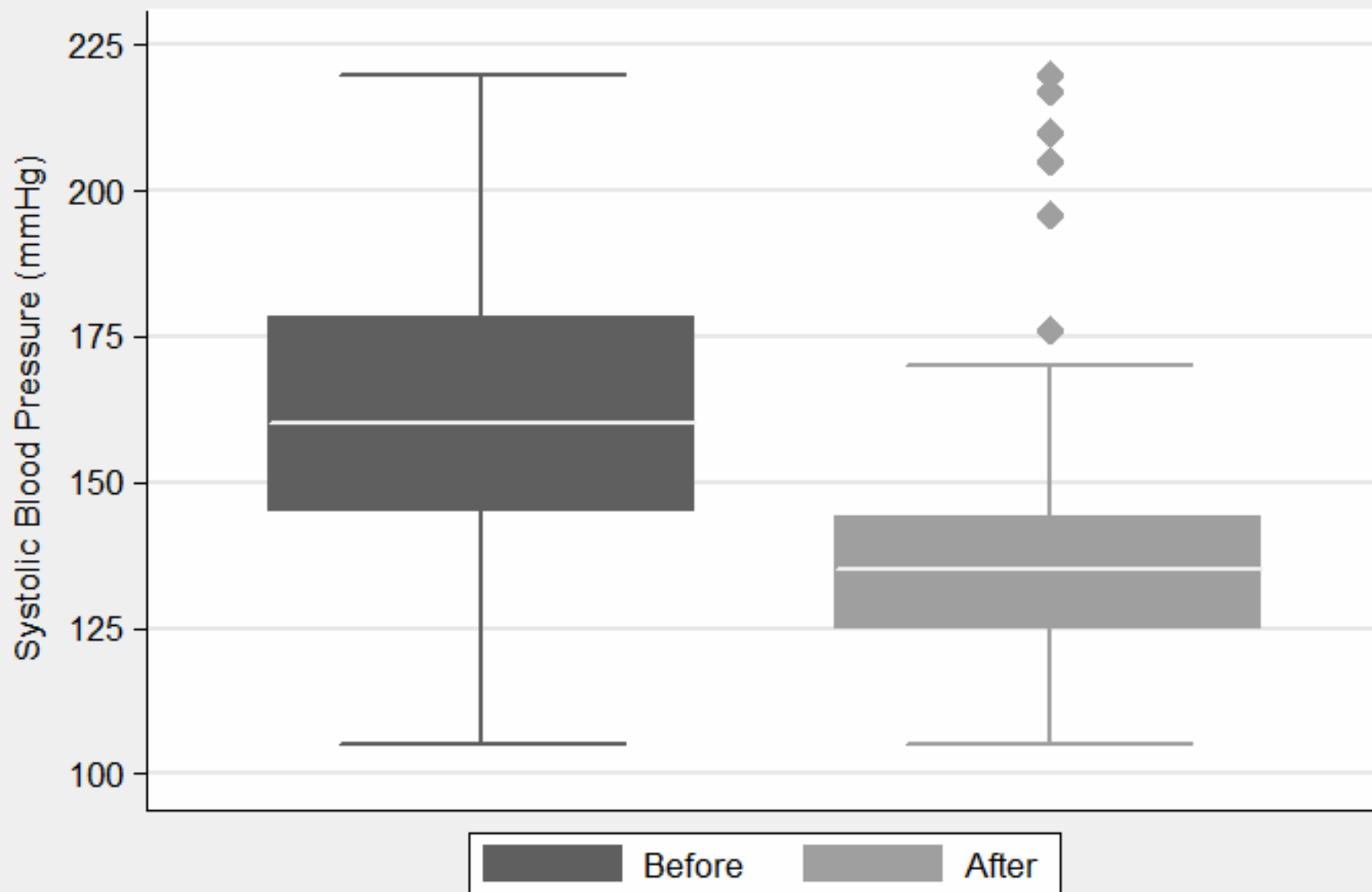
Mean age 58 years, mean referral BP 162/89 in patients taking a mean of 2.48 antihypertensive drugs



Discharge BP mean 138/78 and mean discharge meds 3.16
Average 2.7 Dr clinic visits and 2 nurse clinic (titration) visits



Commonest cause of hypertension resistance –
underprescription of diuretics



Paired t-test P value < 0.00005

Back to Mr AJ....

Overweight, BP 168/84 on felodipine 10mg, quinapril 40mg, doxazosin 16mg and bendrofluazide 2.5mg daily, troubled by leg swelling

Extensive search for secondary causes of hypertension negative

Where to from here?

Pertinent issues to consider

- eGFR 50ml/min CKD3 – assoc abnormal Na⁺ handling and volume-dependent hypertension
- obesity assoc with increased salt sensitivity, defined by increased SBP in response to sodium loading
(*hyperinsulinaemia increases prox.tubular sodium reabsorption*)
- Commonest cause of resistant hypertension (by far) is underuse of diuretics

Subsequent course

Felodipine reduced to 5mg daily – leg swelling resolved



Bendrofluazide 2.5mg replaced with chlorthalidone 25mg daily

BP fell to 155/84



Spironolactone 12.5mg daily added

BP down to 140/78



Spironolactone increased to 25mg daily

BP down to 128/75

Discharged back to GP

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"The speaker was rushed to the hospital with chest pains. Apparently, he has an opportunity with high blood pressure."