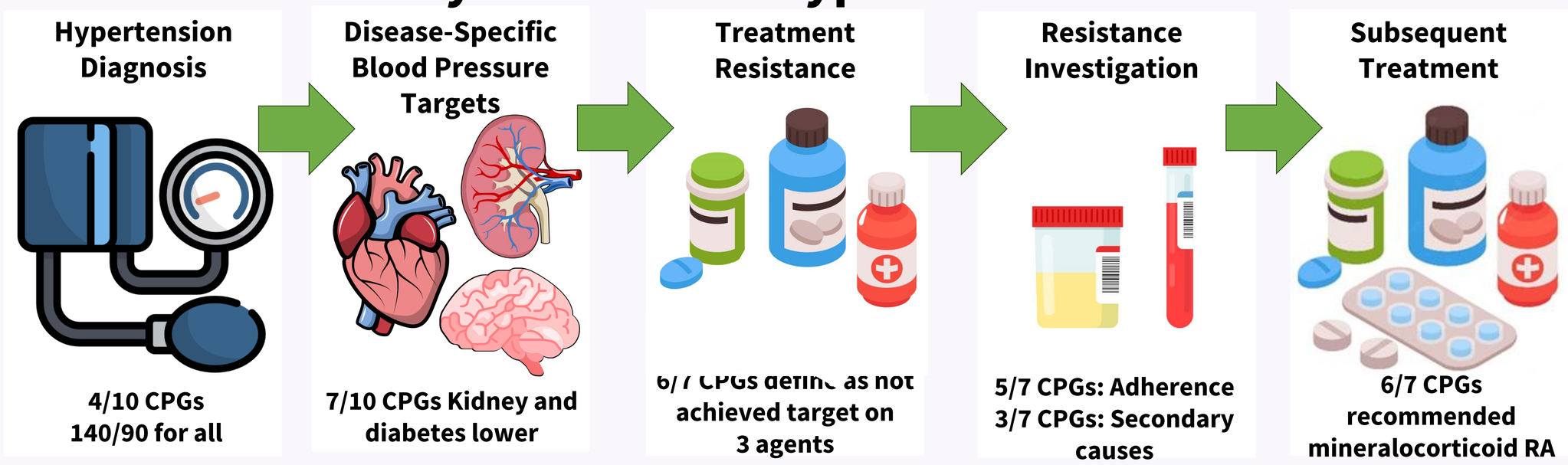
The Diagnosis and Management of Uncontrolled and Treatment-Resistant Hypertension: A Targeted Literature Review of Eight Countries Clinical Practice Guidelines

HSD93

E. Poku[1], E. Simpson[1], A. Cantrell[1], T. Norris[3], E. Coto[2], JJ Garcia Sanchez[3], J. Fotheringham[1]

1. School of Medicine and Population Health, University of Sheffield. UK
2. Biopharmaceuticals Medical, AstraZeneca, Gaithersburg, MD, USA
3. Global Market Access and Pricing, AstraZeneca, Barcelona, Spain

Journey to resistant hypertension treatment



Target blood pressure varies across guidelines leading to variation in characteristics, prevalence, numbers requiring specialist management and resource use for uHTN and trHTN management

Introduction

- Hypertension is common, affecting a third of people between 30 and 79 years of age[1], and is a treatable risk factor for end organ damage: For each 20mmHg elevation of office blood pressure, the risk of fatal coronary artery disease or stroke doubles[2].
- Despite many different drug classes available to prescribers, hypertension can remain uncontrolled (uHTN). Treatment resistant hypertension (trHTN) is commonly defined as failure to achieve the target blood pressure despite 3 or more antihypertensive agents, is suspected in 10-20% of people with hypertension[3], becoming very common in the presence of kidney disease.
- Considering the high prevalence of hypertension, and the proportion of this which is considered trHTN, comparison of evidence-based clinical practice guidelines (CPGs) could identify opportunities to optimise treatment for individuals and achieve better outcomes for people with uHTN and trHTN.

Results

- Ten CPGs from Europe (1), Asia(4), UK (1) and US (n=4) were included from 1,410 records (table 1): CPGs covering Europe and Asia were adopted by multiple geographies.
- Differing US guidelines existed for primary and secondary care settings, whereas others were setting agnostic.
- Broadly, comorbid groups (diabetes, kidney & heart disease) were used to identify populations with lower targets, varying from 140/90 to 125/75 across CPGs.
- No CPGs explicitly defined uHTN beyond individuals not achieving recommended target blood pressure.
- Six of the seven CPGs covering the management of trHTN defined it as inability to achieve therapeutic targets whilst on maximally tolerable doses of three different antihypertensive classes.

Conclusions

- **Target blood pressure varies across guidelines and the populations covered within them leading to variation in characteristics and prevalence of uHTN and trHTN**
- **Consequently variation in numbers of individuals requiring specialist management in hypertension clinics, and the resources required for testing for secondary causes will occur.**
- **Within CPGs, clear definitions of trHTN but not uHTN exist.**
- **It is important that practitioners refer to the most relevant CPGs to define uHTN and trHTN.**

Methods

Number of guidelines / Number of guidelines covering topic,
CPG: Clinical Practice Guideline

- A 2021 systematic review was updated[4], with a targeted literature review of CPGs covering uHTN and trHTN in China, France, Germany, Japan, Italy, Spain, UK and US.
- Search protocol authored and searches conducted January 2024: MEDLINE (via Ovid); EMBASE (via Ovid); CINAHL (via EBSCO); Science Citation Index (via Web of Science). A web search with "guidelines and hypertension and [country]" and the searches of websites of relevant hypertension and cardiology societies in the geographies listed above were also performed.
- Study selection was undertaken without blinding. Title/abstract sifting was conducted by one reviewer, and a 10% sample checked by a second reviewer. Full texts of included abstracts were sourced and checked by two reviewers independently.
- A standardised data extraction form was designed and piloted in. Data including definitions, investigations, blood pressure targets and therapeutic management strategies were extracted by one reviewer and checked by another. Data were tabulated and discussed in a narrative review.

Table 1: included guidelines and recommendations on management

Guideline (Country)		2023 ESC/ESH (Europe)	2019 JSH (Japan)	2020 HOPE Asia (Asia)	2022 HOPE Asia MBPS (Asia)	2023 NG136 (England & Wales)	2018 CGPTH (China)	2017 ACC/AHA (USA)	2022 AAFP (USA)	2020 VA/DoD (USA)	2014 JNC8 (USA)
Threshold: Hypertension diagnosis (SBP/DBP mmHg)	OBPM	≥140 /90	>140/90	>140/90	NR	≥140/90	≥140/90	≥130/80	≥140/90	≥140/90[4] or >130 /90[5]	≥140/90
	HBPM	≥135/85	≥135/85	≥135/85[a] or ≥120/70[b]	≥135/85	≥135/85	≥135/85	≥130/80	NR	NR	NR
Threshold: Anti-Hypertension treatment initiation [specific sub-groups] (SBP/DBP mmHg)	HPT	140/90 [18 – 79 yrs][c]	Risk stratified	NR	<135/85	160/100[d]	140/90[e]	140/90	140/90	130/90	150/90 [>60yrs][f]
	HF	NR	NA	NR	<125/75	140/90 [18 – 80yrs]	NR	130/80	NR	NR	NR
	Stroke	140/80	130/80	NR	NR	140/90 [18 – 80yrs]	140/90	140/90	NR	NR	NR
	T2DM	≥140/ 90	130/80	NR	<125/75	140/90 [18 – 80yrs]	140/90	130/80	NR	NR	NR
	CKD	≥140/ 90	130/80	NR	<125/75	130/80 to 140/90[g]	140/90	130/80	NR	NR	NR
Treatment Resistant Hypertension (trHTN)											
Prior Treatments Definition		A+C+D (thiazide)	D+2 agents	NR	NR	A+C+D (thiazide)	A+C+D (thiazide)	D+2 agents	NR	3 agents	3 or 4 medications
Check Adherence		✓	✓			✓		✓	✓		
Secondary Causes		✓	✓					✓			
Recommended Treatments		MRA [eGFR≥30]	NR	MRA	NR	MRA	MRA or D (thiazide)	MRA	NR	MRA	Other classes

AAFP, American Academy of Family Physicians; ACC/AHA, American College of Cardiology/American Heart Association; CGPTH, Chinese Guidelines for Prevention and Treatment of Hypertension; CKD, chronic kidney disease; CPG, clinical practice guidelines; eGFR, estimated glomerular filtration rate; HOPE Asia, Hypertension, brain, cardiovascular and renal Outcome Prevention and Evidence in Asia; HBPM, home blood pressure measurement; HF, heart failure; NR, not reported, OBPM, office blood pressure measurement; T2DM, type 2 diabetes mellitus; VA/DoD, U.S. Department of Veterans Affairs/U.S. Department of Defence, yrs, age in years

Treatments: A: Angiotensin-converting enzyme inhibitors and angiotensin receptor blockers; C: Calcium channel blockers; D: Diuretics; MRA: mineralocorticoid receptor antagonists

a. Recorded as morning and evening readings or an average of the two readings.
b. Recorded as evening reading
c. SBP >140 – 160 [>=80yrs]
d. >=160 [isolated SBP]
e. >=150/90 | SBP>=160 or DBP>=80 [65 – 79yrs]
f. SBP=140 or DBP=90 [<60 yrs]
g. 140/90 [uACR<70mg/mmol] or 130/80 [uACR>=7mg/mmol]

SCAN FOR REFERENCES

University of Sheffield

Contact
j.fotheringham@sheffield.ac.uk
for more information

DISCLOSURES
This review was funded by AstraZeneca. In addition, JF reports research funding from Boehringer Ingelheim and CSL Vifor. TN, EC and JJGS are employees of AstraZeneca, and may hold shares/stock options