

Κείμενο ομοφωνίας για τη βελτίωση της ρύθμισης της υπέρτασης στη Ελλάδα

Κων/νος Τσιούφης

Καθηγητής-Διευθυντής Α Καρδιολογικής Κλινικής ΕΚΠΑ

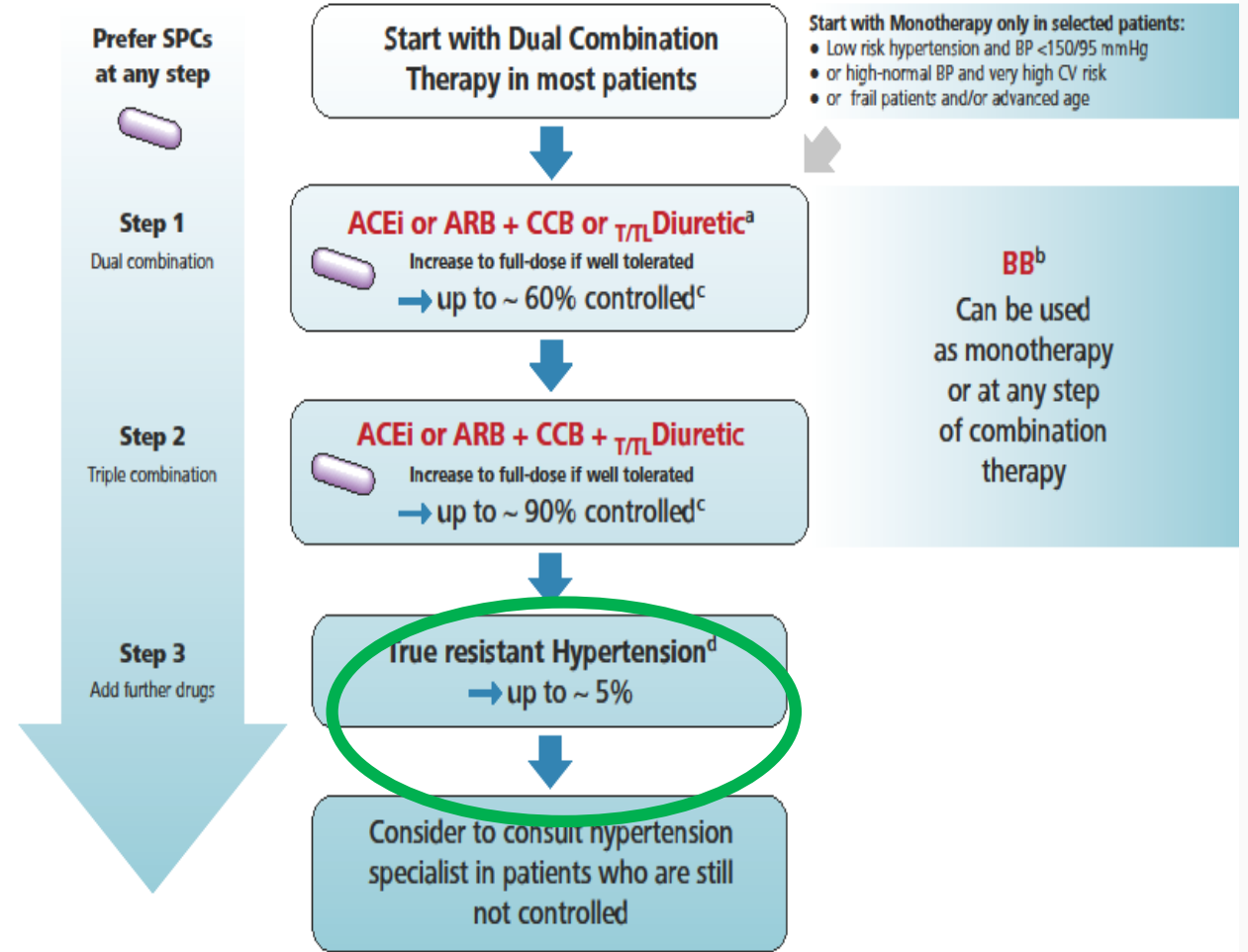
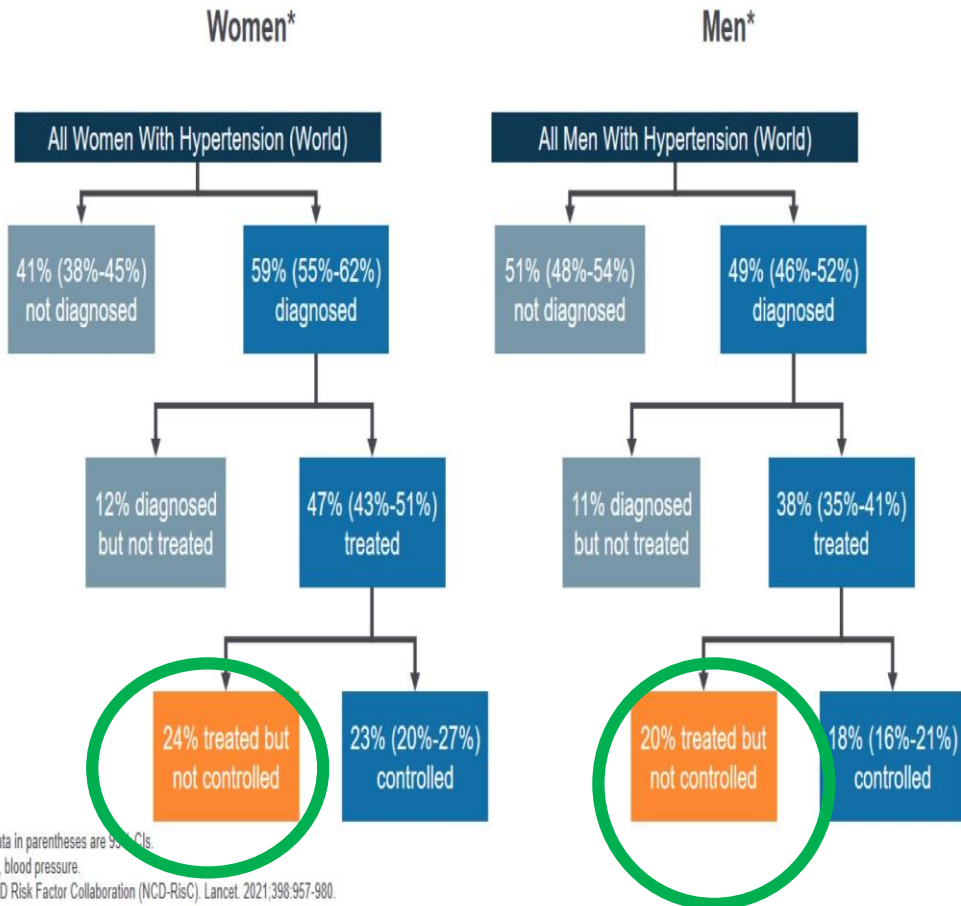
Αντιπρόεδρος Πρόεδρος Ιατρικής Σχολής ΕΚΠΑ

President of European Society of Hypertension (ESH) (2018-19)



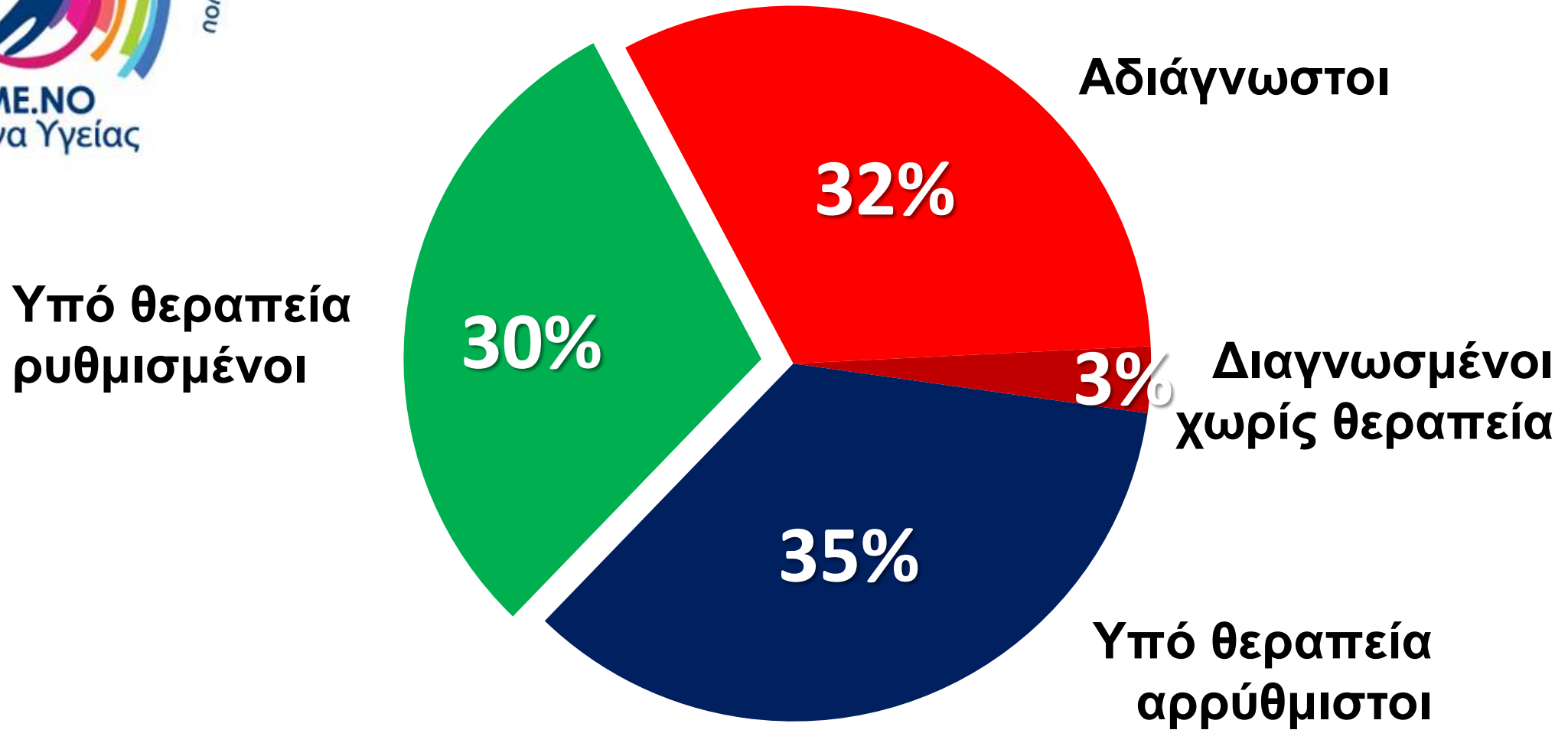
The numbers are here

BP Control Remains Poor Despite Anti-HTN Drug Availability



J Hypertens. 2023 Dec 1;41(12):1874-2071.

ΥΠΕΡΤΑΣΗ



N=4,699

Use of RDN as the 3rd pillar for Uncontrolled/Resistant HTN management in the new GDLs



ESH Guidelines

2023 ESH Guidelines for the management of arterial hypertension

The Task Force for the management of arterial hypertension of the European Society of Hypertension

Endorsed by the International Society of Hypertension (ISH) and the European Renal Association (ERA)

Authors/Task Force Members: Giuseppe Mancia (Chairperson)^{a,*}, Reinhold Kreutz (Co-Chair)^{b,*}, Mattias Brunström^c, Michel Burnier^d, Guido Grassi^e, Andrzej Januszewicz^f, Maria Lorenza Muiesan^g, Konstantinos Tsioufis^h, Enrico Agabiti-Roseiⁱ, Engi Abd Elhady Algharably^b, Michel Azizi^{j,k}, Athanase Benetos^l, Claudio Borghi^m, Jana Brguljan Hitijⁿ, Renata Cifkova^{o,p}, Antonio Coca^q, Veronique Cornelissen^r, J. Kennedy Cruickshank^s, Pedro G. Cunha^{t,u}, A.H. Jan Danser^v, Rosa Maria de Pinho^w, Christian Delles^x, Anna F. Dominiczak^y, Maria Dorobantu^z, Michalis Doumas^{aa}, María S. Fernández-Alfonso^{bb,cc}, Jean-Michel Halimi^{dd,ee,ff}, Zoltán Járαι^{gg}, Bojan Jelakovic^{hh}, Jens Jordan^{ii,jj}, Tatiana Kuznetsova^{kk}, Stephane Laurent^{ll}, Dragan Lovic^{mm}, Empar Lurbe^{nn,oo,pp}, Felix Mahfoud^{qq,rr}, Athanasios Manolis^{ss}, Marius Miglinas^{tt,uu}, Krzysztof Narkiewicz^{vv}, Teemu Niiranen^{www,xx}, Paolo Palatini^{yy}, Gianfranco Parati^{zz,aaa}, Atul Pathak^{bbb}, Alexandre Persu^{ccc}, Jorge Polonia^{ddd}, Josep Redon^{eee,fff}, Pantelis Sarafidis^{ggg}, Roland Schmieder^{hhh}, Bart Spronckⁱⁱⁱ, Stella Stabouli^{jjj}, George Stergiou^{kkk}, Stefano Taddei^{lll}, Costas Thomopoulos^{mmm}, Maciej Tomaszewski^{nnn,ooo}, Philippe Van de Borne^{ppp}, Christoph Wanner^{qqq}, Thomas Weber^{rrr}, Bryan Williams^{sss}, Zhen-Yu Zhang^{ttt}, and Sverre E. Kjeldsen^{uuu}



European Heart Journal (2024) 00, 1–107
<https://doi.org/10.1093/eurheartj/ehae178>

ESC GUIDELINES

2024 ESC Guidelines for the management of elevated blood pressure and hypertension

Developed by the task force on the management of elevated blood pressure and hypertension of the European Society of Cardiology (ESC) and endorsed by the European Society of Endocrinology (ESE) and the European Stroke Organisation (ESO)

Authors/Task Force Members: John William McEvoy^{†,*}, (Chairperson) (Ireland), Cian P. McCarthy[‡], (Task Force Co-ordinator) (United States of America), Rosa Maria Bruno[‡], (Task Force Co-ordinator) (France), Sofie Brouwers[§] (Belgium), Michelle D. Canavan[§] (Ireland), Claudio Ceconi[§] (Italy), Ruxandra Maria Christodorescu[§] (Romania), Stella S. Daskalopoulou[§] (Canada), Charles J. Ferro[§] (United Kingdom), Eva Gerds[§] (Norway), Henner Hanssen[§] (Switzerland), Julie Harris (United Kingdom), Lucas Lauder[§] (Switzerland/Germany), Richard J. McManus[§] (United Kingdom), Gerard J. Molloy[§] (Ireland), Kazem Rahimi[§] (United Kingdom), Vera Regitz-Zagrosek (Germany), Gian Paolo Rossi[§] (Italy), Else Charlotte Sandset[§] (Norway), Bart Scheenaerts (Belgium), Jan A. Staessen[§] (Belgium), Izabella Uchmanowicz[§] (Poland), Maurizio Volterrani[§] (Italy), Rhian M. Touyz^{†,*}, (Chairperson) (Canada), and ESC Scientific Document Group

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PUBLISHED BY ELSEVIER

VOL. ■, NO. ■, 2025

CLINICAL PRACTICE GUIDELINE

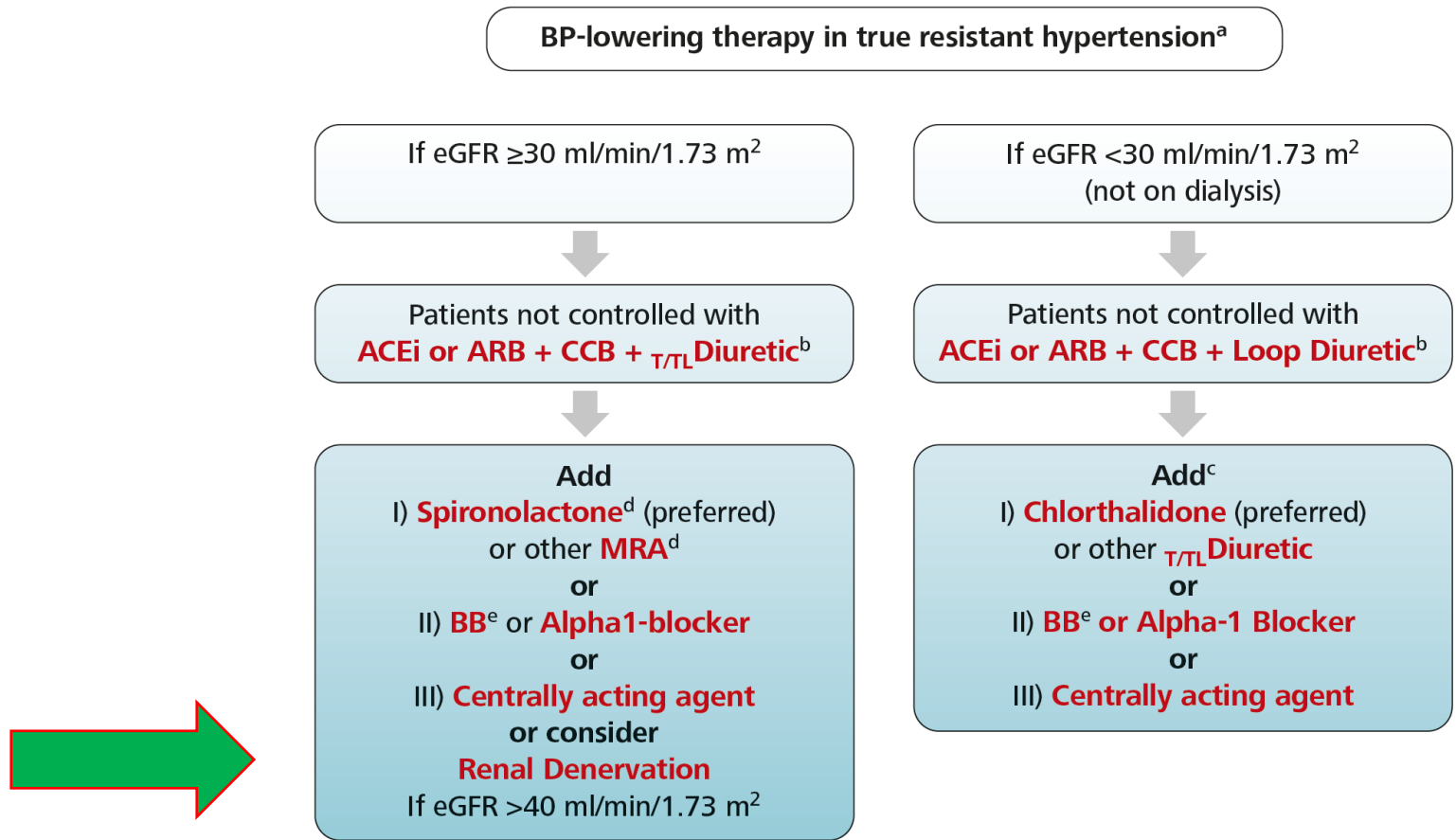
2025 AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/AGS/AMA/ASPC/NMA/PCNA/SGIM Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Developed in Collaboration With and Endorsed by American Academy of Physician Associates; American Association of Nurse Practitioners; American College of Clinical Pharmacy; American College of Preventive Medicine; American Geriatrics Society; American Medical Association; American Society of Preventive Cardiology; Association of Black Cardiologists; National Medical Association; Preventive Cardiovascular Nurses Association; and the Society of General Internal Medicine.

1. Mancia G. et al. Journal of Hypertension 2023, 41(12):1874-2071 DOI:10.1097/HJH.0000000000003480
2. McEvoy et al. European Heart Journal ehae178. <https://doi.org/10.1093/eurheartj/ehae178>

2023 ESH guidelines for HTN management



New 2024 ESC guidelines recommend RDN for uncontrolled and resistant HTN

- Endorsed by European Society of Endocrinology (ESE) and European Stroke Organization (ESO)



Catheter-based RDN may be considered in medium to high volume centers:	Class of recommendation (CoR)
<ul style="list-style-type: none"> • In uncontrolled HTN patients with increased CVD risk and on fewer than 3 drugs • And who express a preference for RDN after a shared risk-benefit discussion and multi-disciplinary assessment* 	IIb
<ul style="list-style-type: none"> • In resistant hypertension patients who have uncontrolled BP despite a 3-drug combination pill (including a thiazide or thiazide-like diuretic) • And who express a preference for RDN after a shared risk-benefit discussion and multi-disciplinary assessment 	

* A multidisciplinary team is defined as two or more healthcare professionals working together. This can include, but is not limited to, a proceduralist and a non-invasive physician.

• Adapted from McEvoy et al. *European Heart Journal* ehae178. <https://doi.org/10.1093/eurheartj/ehae178>

2025 ACC/AHA Guidelines recommend RDN and indicate which patients may benefit

• Endorsed by multiple societies



AMERICAN COLLEGE of CARDIOLOGY



Recommendations and Statements	Class of Recommendation (CoR)
<p>Office SBP \geq 140 mmHg and DBP \geq 90 mmHg</p> <ul style="list-style-type: none"> • Resistant hypertension: <ul style="list-style-type: none"> • For patients with hypertension uncontrolled despite the use of \geq3 antihypertensive agents of different classes, including a diuretic or requiring \geq 4 drugs to achieve control • Uncontrolled hypertension: <ul style="list-style-type: none"> • For patients who cannot tolerate or are unwilling / unable to adhere to additional medications 	<p>IIb</p>
<p>For patients with hypertension for whom RDN is contemplated, the benefits of lowering BP and potential procedural risks compared with continuing medical therapy should be discussed as part of a shared decision-making process to ensure patients choose the therapy that meets their expectations.</p>	<p>I</p>
<p>All patients who are being considered for RDN should be evaluated by a multidisciplinary team with expertise in resistant hypertension and RDN.</p>	

RDN : Original work in Hippocratio Hospital



Start
point

[Catheter-based renal sympathetic denervation exerts acute and chronic effects on renal hemodynamics in swine.](#)

Tsioufis C, Papademetriou V, Dimitriadis K, Tsiachris D, Thomopoulos C, Park E, Hata C, Papalois A, Stefanadis C. *Int J Cardiol.* 2013 Sep 30;168(2):987-92.

[Drug-resistant hypertensive patients responding to multielectrode renal denervation exhibit improved heart rate dynamics and reduced arrhythmia burden.](#)

Tsioufis C, Papademetriou V, Tsiachris D, Dimitriadis K, Kasiakogias A, Kordalis A, Antonakis V, Kefala A, Thomopoulos C, Kallikazaros I, Lau EO, Stefanadis C. *J Hum Hypertens.* 2014 Oct;28(10):587-93.

[Electrical stimulation of the renal arterial nerves does not unmask the blindness of renal denervation procedure in swine.](#)

Tsiachris D, Tsioufis C, Dimitriadis K, Kordalis A, Thomopoulos C, Kasiakogias A, Papalois A, Papademetriou V, Tousoulis D, Stefanadis C. *Int J Cardiol.* 2014 Oct 20;176(3):1061-3

[Effects of multielectrode renal denervation on cardiac and neurohumoral adaptations in resistant hypertension with cardiac hypertrophy: an EnligHTN I substudy.](#)

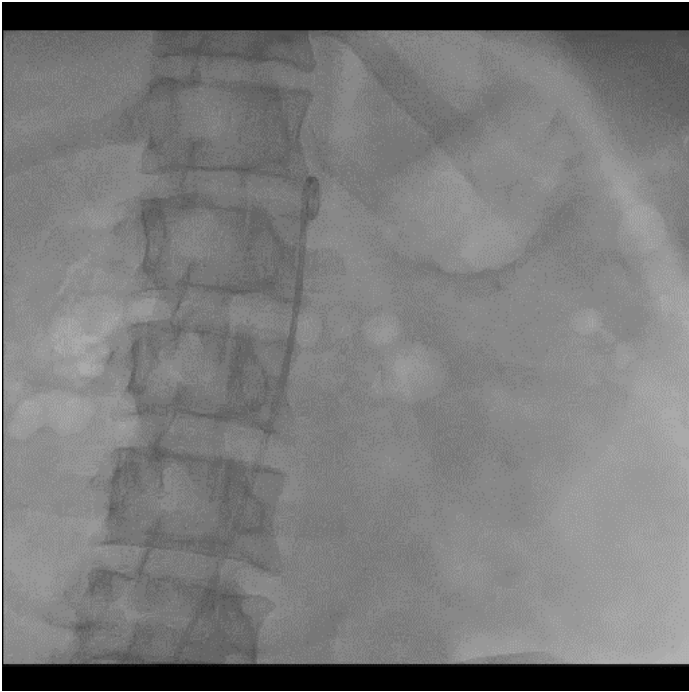
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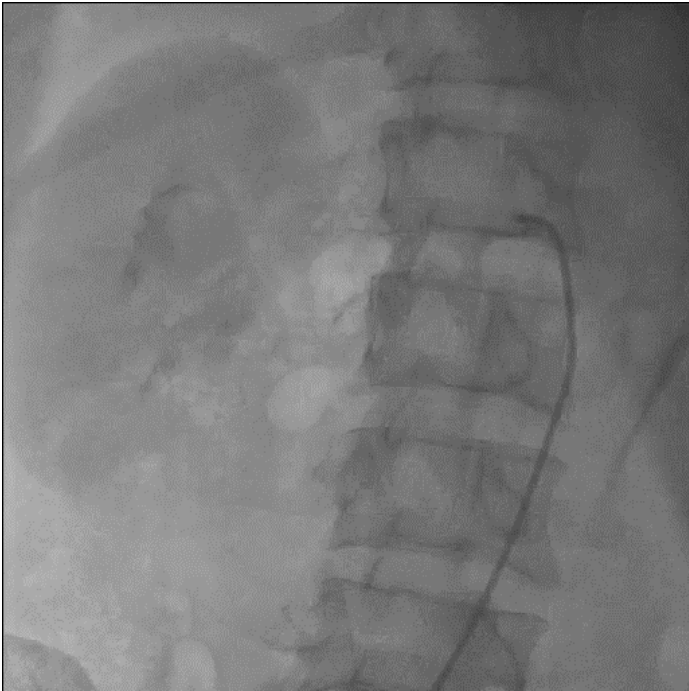
[Impact of multi-electrode renal sympathetic denervation on short-term blood pressure variability in patients with drug-resistant hypertension. Insights from the EnligHTN I study.](#)

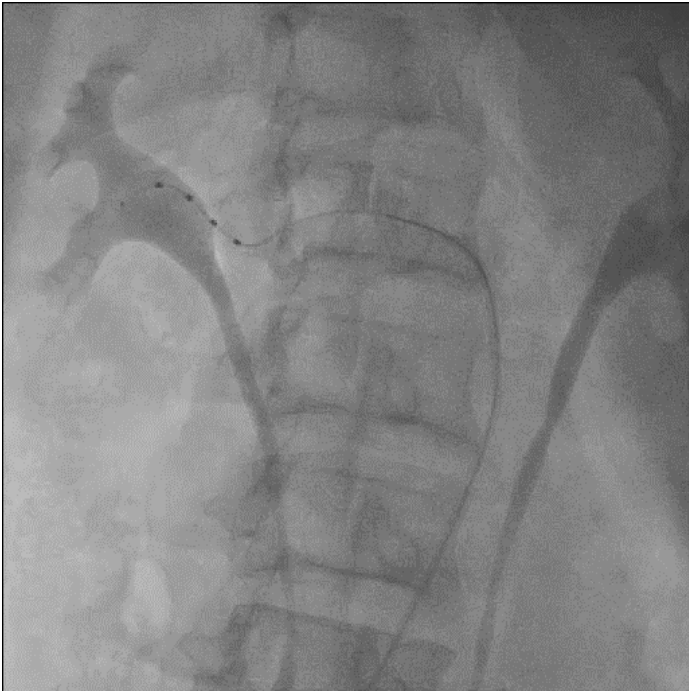
Tsioufis C, Papademetriou V, Tsiachris D, Kasiakogias A, Kordalis A, Thomopoulos C, Dimitriadis K, Tousoulis D, Stefanadis C, Parati G, Worthley S. *Int J Cardiol.* 2015 Feb 1;180:237-42

[Catheter-based renal denervation for resistant hypertension: Twenty-four month results of the EnligHTN I first-in-human study using a multi-electrode ablation system.](#)

Tsioufis CP, Papademetriou V, Dimitriadis KS, Kasiakogias A, Tsiachris D, Worthley MI, Sinhal AR, Chew DP, Meredith IT, Malaiapan Y, Thomopoulos C, Kallikazaros I, Tousoulis D, Worthley SG. *Int J Cardiol.* 2015









ORIGINAL ARTICLE

Long-term effects of renal denervation on hypertension management: insights from an ESH center of excellence and a meta-analysis of current evidence

Tsioufis, Konstantinos; Soulaidopoulos, Stergios; Konstantinidis, Dimitrios; Dimitriadis, Kyriakos; Tatakis, Fotis; Stathoulopoulou, Maria; Kyriakoulis, Konstantinos G.; Plataniias, Konstantinos; Papadomarkaki, Konstantia; Iliakis, Panagiotis; Tsiachris, Dimitrios; Kasiakogias, Alexandros; Kordalis, Athanasios; Papademetriou, Vasilios

[Author Information](#) 

Journal of Hypertension ():10.1097/HJH.0000000000004184, October 23, 2025. | DOI: 10.1097/HJH.0000000000004184

Long-term Effects of Renal Denervation on Hypertension Management

Insights from an ESH Excellence Center

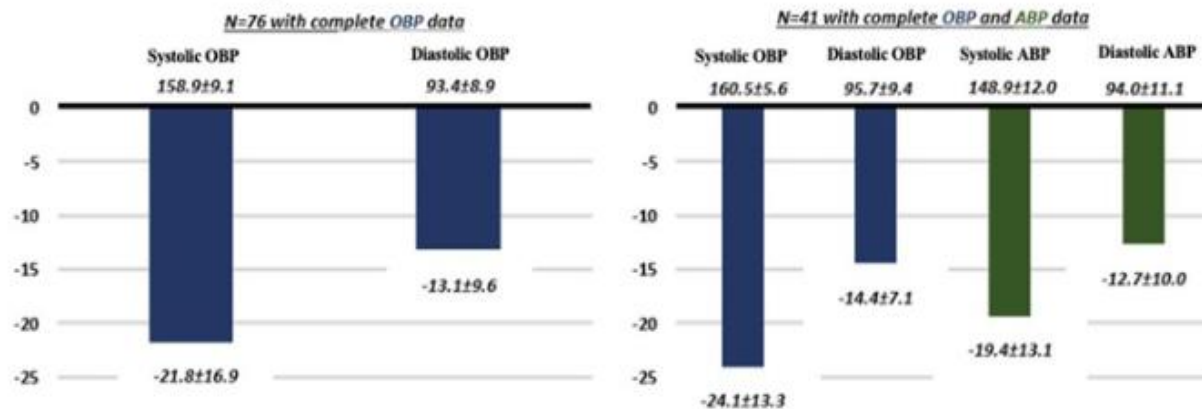


Office
blood pressure

76 patients
61 years
25% females
Follow-up 8.3 years



Ambulatory
blood pressure



Background:

Renal denervation (RDN) has been approved in Europe and the United States and is recommended by the ESH and ESC hypertension guidelines as a therapeutic option for patients with resistant or uncontrolled hypertension. The aim of this study was to evaluate the long-term outcomes of radiofrequency (RF) RDN in a cohort of patients treated at an ESH center of excellence, with a mean follow-up of 8 years, and to review current evidence on the durability and safety of the procedure.

Methods:

From a pool of patients with uncontrolled hypertension who had previously undergone RF RDN, we included those with a follow-up longer than 3 years ($n = 97$). Baseline and follow-up data were collected for each patient, including office blood pressure (OBP), ambulatory blood pressure (ABP), use of antihypertensive medication, and markers of renal function. A propensity-matched control group of patients with resistant hypertension managed conservatively (without RDN) was selected for comparison. All-cause mortality and nonfatal cardiovascular events were recorded. Additionally, we conducted a systematic review and meta-analysis of studies reporting RDN outcomes with follow-up periods exceeding 3 years.

Results:

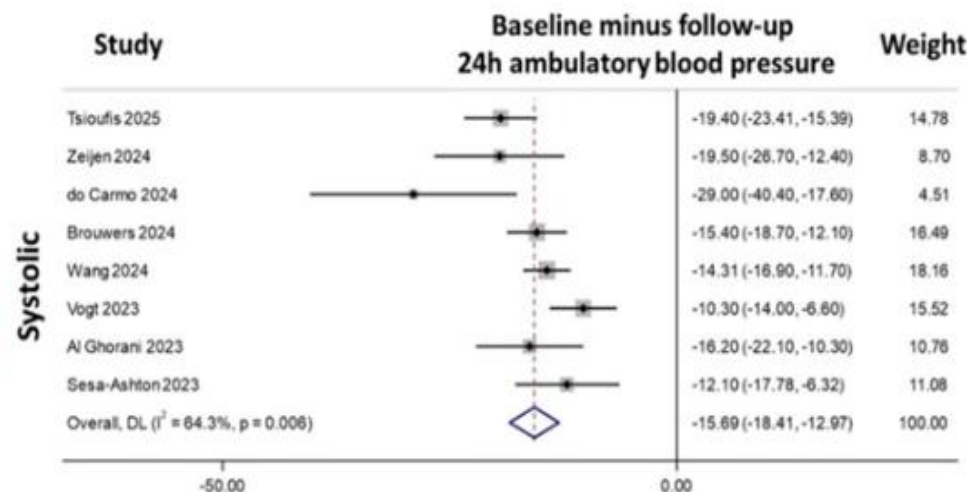
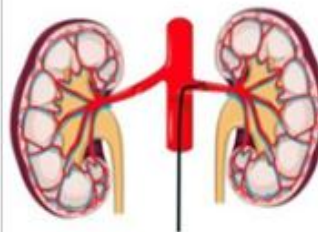
A total of 76 patients (mean age 61.4 ± 10.5 years, 25% female) had follow-up data over a mean of 8.3 ± 3.4 years. OBP decreased significantly from baseline by 21.8 ± 16.9 mmHg systolic and 13.1 ± 9.6 mmHg diastolic ($P < 0.001$ for both). In 41 patients with ABP data, systolic ABP decreased by 19.4 ± 13.1 mmHg and diastolic ABP by 12.7 ± 10.0 mmHg ($P < 0.001$ for both). The number of prescribed antihypertensive medications was reduced by 0.54 ± 1.2 ($P < 0.01$). By the end of follow-up, 9 of the 97 RDN patients (9.3%) had died, compared with 5 of 44 control patients (11.4%) over a mean follow-up of 8.1 ± 2.3 years. Twelve patients were lost to follow-up. Estimated glomerular filtration rate declined significantly in the RDN group from 83.0 ± 14.4 to 75.5 ± 19.2 mL/min/1.73 m² ($P < 0.001$). A meta-analysis of eight studies, including ours, with a mean follow-up of 8.7 years, showed a reduction in 24-h systolic ABP of -15.7 mmHg [95% confidence interval (CI): -18.4 to -13.0] and diastolic ABP of -9.2 mmHg (95% CI: -10.5 to -7.9), consistent with our findings. No major adverse events were reported.

Conclusion:

RDN is a safe procedure that provides durable antihypertensive effects lasting for at least 8 years.

Meta-analysis of Current Evidence

8 studies
N=384
61 years
34% females
Follow-up ~8.7 years



Hippocratio Hospital : CKD –RDN study

Renal denervation in a Hypertensive patient with CKD

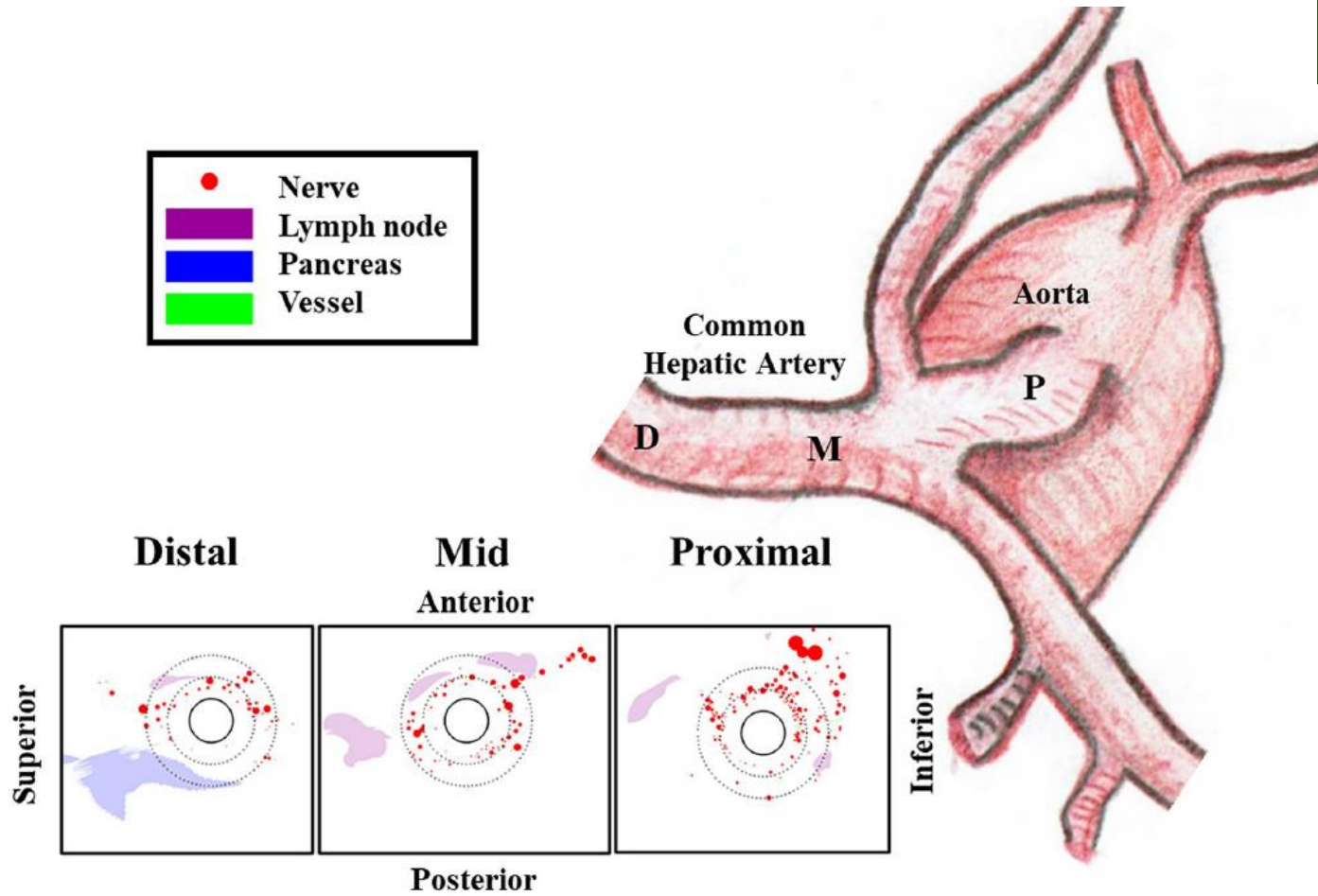


Hypertension Research (2023) 46:1747–1758
<https://doi.org/10.1038/s41440-023-01287-x>
REVIEW ARTICLE

Multi-organ denervation: a novel approach to combat cardiometabolic disease

Márcio Galindo Kiuchi₁. Revathy Carnagarin₁. Vance B. Matthews₁. Markus
P. Schlaich_{1,2,3}

Human Common Hepatic Artery Is Richly Innervated

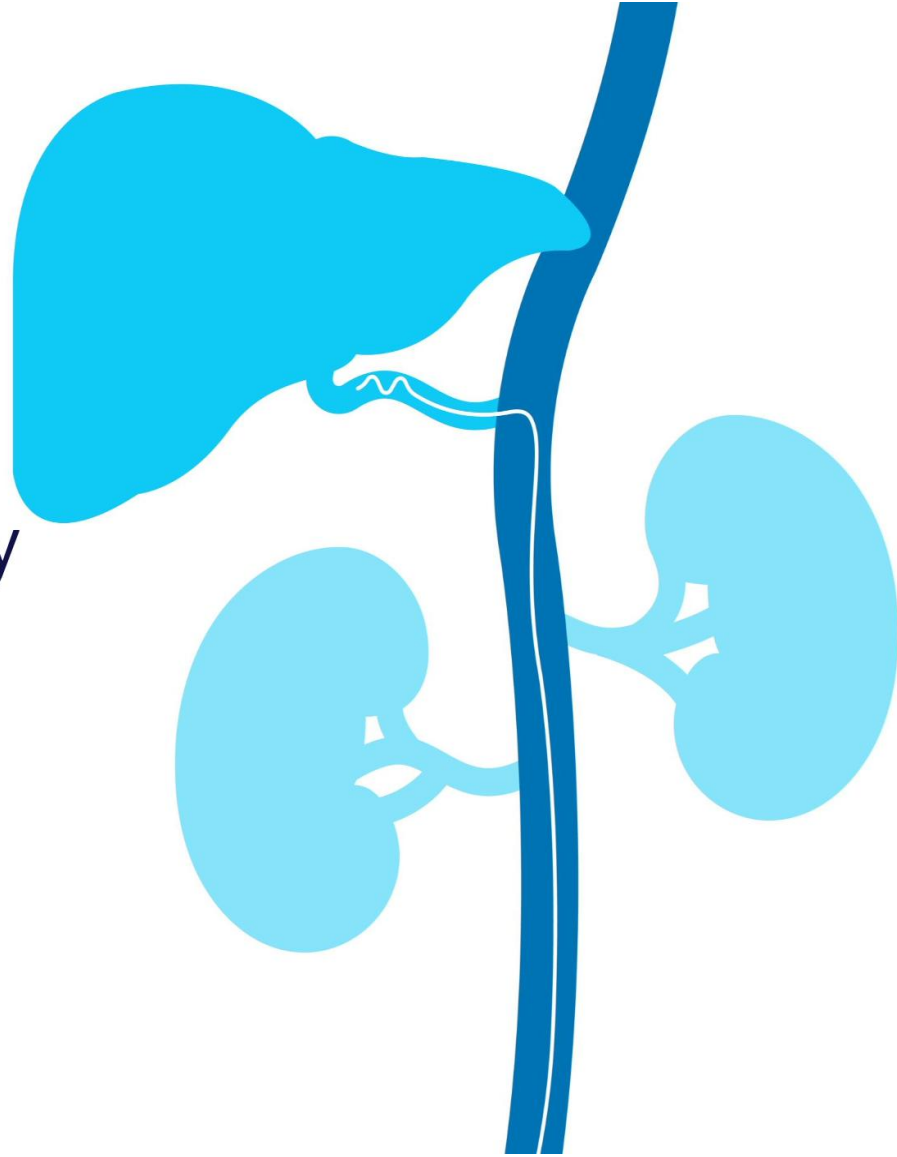


Anatomical Considerations

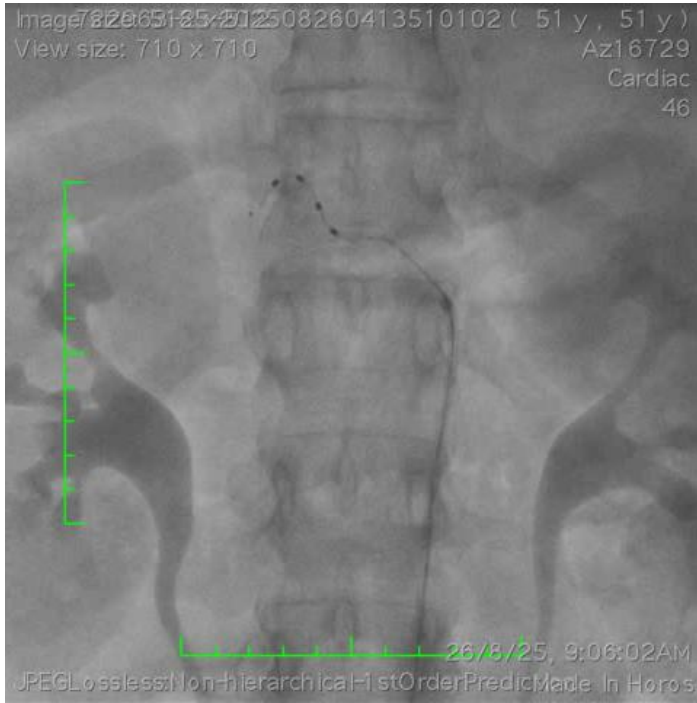
- Human liver is richly innervated, and accessible through the Common Hepatic Artery (CHA)
 - Nerves surrounding the CHA are **3x larger (0.35 vs. 0.12 mm)** vs. peri-renal nerves
 - Nerves surrounding the CHA are **2x more abundant (81.6 vs. 37.5 nerves/tissue section)** vs. peri-renal nerves
- CHA diameter and length is roughly equivalent to the renal arteries
- Approximately 90% of the nerves are ≤ 5 mm from the CHA lumen

Medtronic

SPYRAL GEMINI Pilot Study



Hepatic denervation







Hellenic Society of Hypertension



Hellenic Society of Cardiology
(WGs “Hypertension and Heart”
and “Interventional Cardiology”)



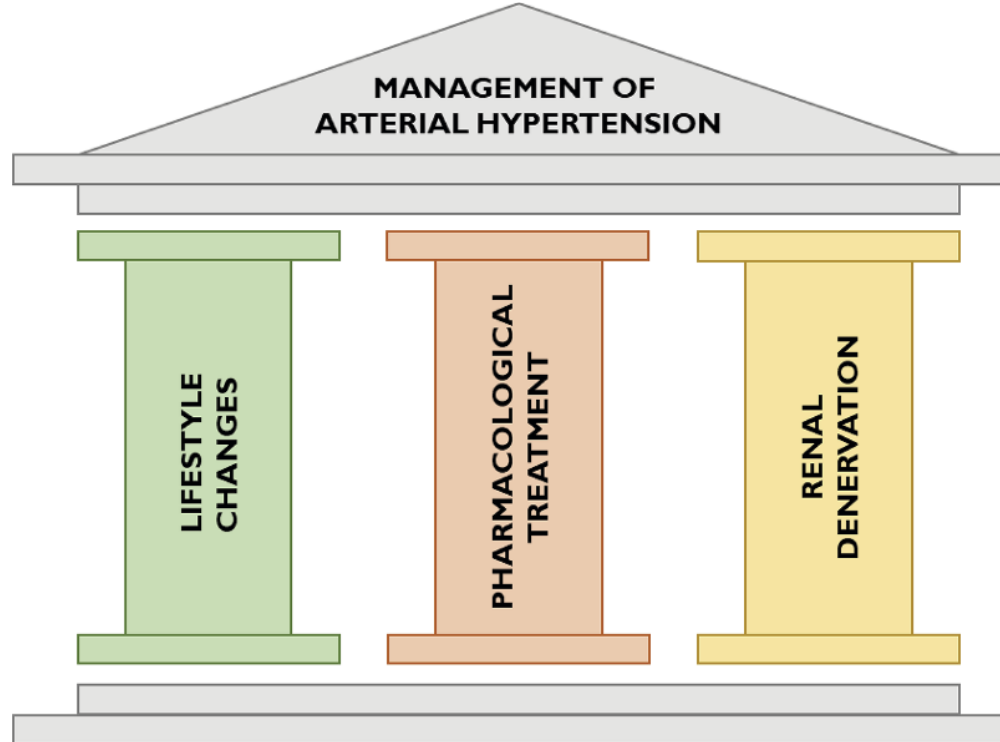
Hellenic Society
of Nephrology



Hellenic Academy of
General Practice/Family
Medicine and Primary
Health Care

Consensus referral pathway for the clinical use of renal denervation in uncontrolled hypertension: a joint statement by the Hellenic Society of Hypertension, the Hellenic Society of Cardiology (WGs “Hypertension and Heart” and “Interventional Cardiology”), the Hellenic Society of Nephrology and the Hellenic Academy of General Practice/Family Medicine and Primary Health Care

Konstantinos Tsioufis,¹ Michael Doumas,² Konstantinos Aznaouridis,¹ Periklis Davlourous,³ Kyriakos Dimitriadis,¹ Evangelos Fragkoulis,⁴ Gerasimos Gavrielatos,⁵ Eugenia Gkaliagkousi,⁶ Michalis Hamilos,⁷ Rigas Kalaitzidis,⁸ Manolis S. Kallistratos,⁹ Anastasios Kollias,¹⁰ Alexandros Kasiakogias,¹ Dimitrios Konstantinidis,¹ Konstantinos G. Kyriakoulis,¹ Efstathios Manios,¹¹ Anargiros Mariolis,¹² Maria Marketou,⁷ Lampros K. Michalis,¹³ Stylianos Panagoutsos,¹⁴ Evangelos Papachristou,¹⁵ Dimitrios Petras,¹⁶ Elias Sanidas,¹⁷ Stergios Soulaïdopoulos,¹ Konstantinos Stavropoulos,² George S. Stergiou,¹⁰ Fotis Tatakis,¹ Costas Thomopoulos,¹⁷ Helen Triantafyllidi,¹⁸ Georgios Triantis,¹⁹ Ioannis Tsiafoutis,²⁰ Grigorios Tsigkas,³ Dimitrios Tziakas,²¹ Antonios Ziakas,²² Konstantinos Toutouzas,¹ **Pantelis Sarafidis⁴**



Recommendations and statements	CoR	LoE
RDN can be considered as a treatment option in patients with an eGFR >40 mL/min/1.73m ² who have uncontrolled BP despite the use of antihypertensive drug combination therapy, or if drug treatment elicits serious side effects and poor quality of life.	II	B
RDN can be considered as an additional treatment option in patients with true resistant hypertension if eGFR is >40 mL/min/1.73m ² .	II	B
Selection of patients to whom RDN is offered should be done in a shared decision-making process after objective and complete patient's information.	I	C
RDN should only be performed in experienced specialized centers to guarantee appropriate selection of eligible patients and completeness of the denervation procedure.	I	C



Recommendations	Class ^a	Level ^b
To reduce BP, and if performed at a medium-to-high volume centre, catheter-based renal denervation may be considered for resistant hypertension patients who have BP that is uncontrolled despite a three BP-lowering drug combination (including a thiazide or thiazide-like diuretic), and who express a preference to undergo renal denervation after a shared risk-benefit discussion and multidisciplinary assessment. ^{104,106-108,206-209}	IIb	B
To reduce BP, and if performed at a medium-to-high volume centre, catheter-based renal denervation may be considered for patients with both increased CVD risk and uncontrolled hypertension on fewer than three drugs, if they express a preference to undergo renal denervation after a shared risk-benefit discussion and multidisciplinary assessment. ^{104,106-108,206-209}	IIb	A
Due to a lack of adequately powered outcomes trials demonstrating its safety and CVD benefits, renal denervation is not recommended as a first-line BP-lowering intervention for hypertension.	III	C
Renal denervation is not recommended for treating hypertension in patients with moderate-to-severely impaired renal function (eGFR <40 mL/min/1.73 m ²) or secondary causes of hypertension, until further evidence becomes available.	III	C



- 2b II-B
- 4. In carefully selected patients with systolic and diastolic hypertension (office SBP 140-180 mm Hg and DBP ≥90 mm Hg) and eGFR ≥40 mL/min/1.73 m² who have resistant hypertension despite optimal treatment, or intolerable side effects to additional antihypertensive drug therapy, renal denervation (RDN) may be reasonable as an adjunct treatment to BP medications and lifestyle modification to reduce BP.^{12,14}
- 1 B-NR
- 5. All patients with hypertension who are being considered for RDN should be evaluated by a multidisciplinary team with expertise in resistant hypertension and RDN.¹²⁻¹⁴
- 1 C-ED
- 6. For patients with hypertension for whom RDN is contemplated, the benefits of lowering BP and potential procedural risks compared with continuing medical therapy should be discussed as part of a shared decision-making process to ensure patients choose the therapy that meets their expectations.

The Consensus Referral pathway is developed to facilitate the effective implementation of the RDN recommendations within the Greek national health.

The proposed pathway integrates all contemporary therapeutic options in alignment with current hypertension guidelines and takes into account the structure of the Greek health care system.

The path toward optimal BP control - from the initial detection of elevated BP to the potential application of RDN and subsequent follow-up

- **7 Steps**

STEP 1: Detection of High BP Values

The referral pathway for Renal Denervation towards optimal hypertension control


A. Detection of high BP values

Where


- Primary Healthcare Units
 - Private Practice
 - Hypertension Outpatient Clinics
 - Hypertension Excellence Centers
 - Emergency Department
- Cardiologist
 - Internist
 - Nephrologist
 - General Practitioner/Family Doctor
- Pharmacies
 - Self-measured



STEP 2: Confirmation of HTN

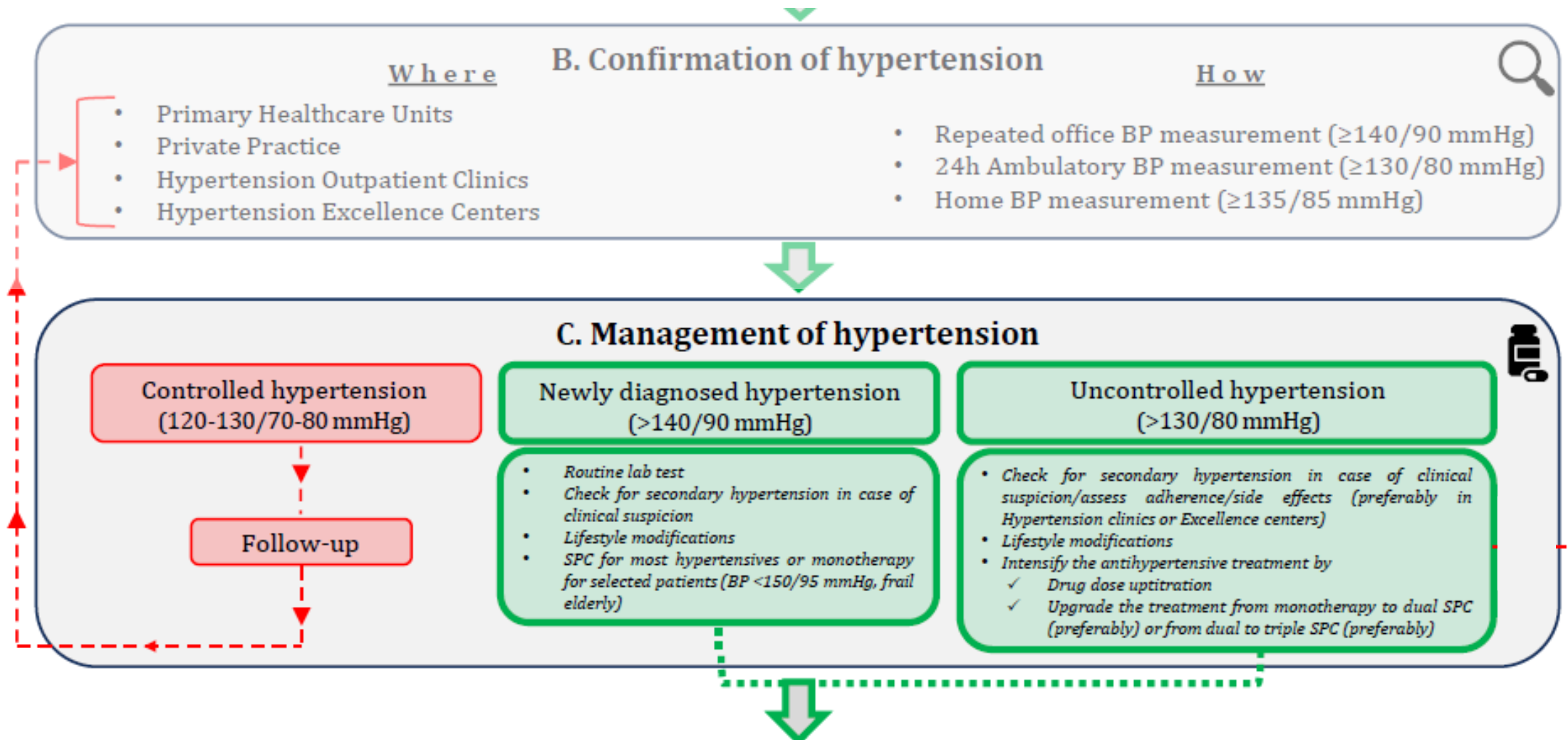


<u>Where</u>	B. Confirmation of hypertension	<u>How</u>
<ul style="list-style-type: none">• Primary Healthcare Units• Private Practice• Hypertension Outpatient Clinics• Hypertension Excellence Centers		<ul style="list-style-type: none">• Repeated office BP measurement ($\geq 140/90$ mmHg)• 24h Ambulatory BP measurement ($\geq 130/80$ mmHg)• Home BP measurement ($\geq 135/85$ mmHg)



In Greece, home BP monitoring is largely available and should be wisely used following physicians' instructions to guide proper therapeutic decisions.

STEP 3: Management of HTN



STEP 4: Follow-up (1–3 Months)

Where

B. Confirmation of hypertension

How

- Primary Healthcare Units
- Private Practice
- Hypertension Outpatient Clinics
- Hypertension Excellence Centers

- Repeated office BP measurement ($\geq 140/90$ mmHg)
- 24h Ambulatory BP measurement ($\geq 130/80$ mmHg)
- Home BP measurement ($\geq 135/85$ mmHg)

C. Management of hypertension

Controlled hypertension
(120-130/70-80 mmHg)

Newly diagnosed hypertension
($>140/90$ mmHg)

Uncontrolled hypertension
($>130/80$ mmHg)

Follow-up

- Routine lab test
- Check for secondary hypertension in case of clinical suspicion
- Lifestyle modifications
- SPC for most hypertensives or monotherapy for selected patients (BP $<150/95$ mmHg, frail elderly)

- Check for secondary hypertension in case of clinical suspicion/assess adherence/side effects (preferably in Hypertension clinics or Excellence centers)
- Lifestyle modifications
- Intensify the antihypertensive treatment by
 - ✓ Drug dose uptitration
 - ✓ Upgrade the treatment from monotherapy to dual SPC (preferably) or from dual to triple SPC (preferably)

D. Follow-up (1-3 months)

Controlled hypertension

Hypertension remaining uncontrol

Follow-up

On 1 drug

On 2 drugs +
Low/moderate CV risk^a

On 2 drugs +
High/Very-High CV risk^a

On 3 drugs
(True Resistant HTN)

^aHigh/very-high CV risk implies established CV disease or increased estimated risk according to CV risk algorithms recommended by current guidelines (e.g., SCORE2)

Box 1 High or very high cardiovascular risk definition according to recent guidelines

- Established cardiovascular disease.
- Stage 4-5 chronic kidney disease.
- High/Very high risk according to SCORE-2, SCORE2-OP, SCORE2-Diabetes risk equations.
- High-normal BP (130-139/85-89 mmHg) with hypertension-mediated organ damage or stage 3 chronic kidney disease or diabetes.
- Grade 1 hypertension (140-159/90-99 mmHg) with ≥ 3 cardiovascular risk factors or with hypertension-mediated organ damage or stage 3 chronic kidney disease or diabetes.
- Grade 2 hypertension (160-179/100-109 mmHg) with ≥ 1 cardiovascular risk factors or with hypertension-mediated organ damage or stage 3 chronic kidney disease or diabetes.
- Grade 3 hypertension ($\geq 180/110$ mmHg).

STEP 5: Shared Decision-Making Process

Thoroughly and objectively informed about their next therapeutic options either to receive additional drugs or be subjected to RDN. Patients should be actively involved in the final decision.

E. Shared decision-making process



- Referral to a Hypertension Outpatient Clinic or Hypertension Excellence Center is recommended
- Objective and complete patient's information regarding additional pharmacotherapy and/or renal denervation
- Assessment of patient's preference and expectations

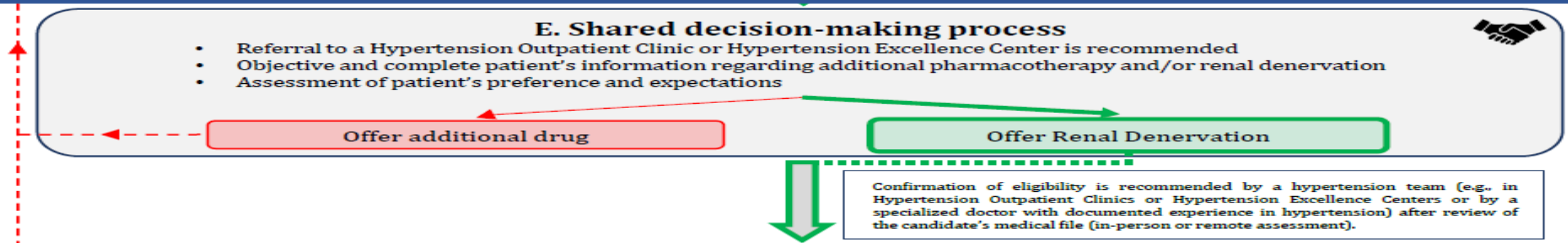
Offer additional drug

Offer Renal Denervation

Confirmation of eligibility is recommended by a hypertension team (e.g., in Hypertension Outpatient Clinics or Hypertension Excellence Centers or by a specialized doctor with documented experience in hypertension) after review of the candidate's medical file (in-person or remote assessment).

STEP 5: Shared Decision-Making Process

Thoroughly and objectively informed about their next therapeutic options either to receive additional drugs or be subjected to RDN. Patients should be actively involved in the final decision.



Box 3 Eligibility criteria for renal denervation

- True resistant hypertension.
- Uncontrolled hypertension based on ambulatory blood pressure monitoring despite treatment with more than two antihypertensive medications and confirmed high or very high cardiovascular risk.
- Exclusion of secondary causes of hypertension.
- Estimated glomerular filtration rate (eGFR) > 40 ml/min/1.73 m².
- Main renal artery diameter ≥4 mm and length ≥20 mm.
- Absence of significant renal artery stenosis, renal artery aneurysms, or fibromuscular dysplasia.
- No history of previous renal artery angioplasty or stenting.

STEP 5: Shared Decision-Making Process

Thoroughly and objectively informed about their next therapeutic options either to receive additional drugs or be subjected to RDN. Patients should be actively involved in the final decision.

E. Shared decision-making process

- Referral to a Hypertension Outpatient Clinic or Hypertension Excellence Center is recommended
- Objective and complete patient's information regarding additional pharmacotherapy and/or renal denervation
- Assessment of patient's preference and expectations

Offer additional drug

Offer Renal Denervation

Confirmation of eligibility is recommended by a hypertension team (e.g., in Hypertension Outpatient Clinics or Hypertension Excellence Centers or by a specialized doctor with documented experience in hypertension) after review of the candidate's medical file (in-person or remote assessment).

STRENGTHS

- Continuous, “always-on” blood pressure-lowering effect during daytime and night-time periods.
- Durable blood pressure reduction after the procedure.
- Clinically meaningful magnitude of blood pressure reduction.
- No permanent implant remains after the procedure, with either radiofrequency or ultrasound technologies.
- Potential pleiotropic benefits in hypertension-associated comorbidities, including heart failure, chronic kidney disease, sleep apnea syndrome, atrial fibrillation, and others.

LIMITATIONS

- Lack of reliable predictors of blood pressure response after the procedure; renal denervation remains a procedure performed without real-time feedback.

Box 3 Eligibility criteria for renal denervation

- True resistant hypertension.
- Uncontrolled hypertension based on ambulatory blood pressure monitoring despite treatment with more than two antihypertensive medications and confirmed high or very high cardiovascular risk.
- Exclusion of secondary causes of hypertension.
- Estimated glomerular filtration rate (eGFR) > 40 ml/min/1.73 m².
- Main renal artery diameter ≥4 mm and length ≥20 mm.
- Absence of significant renal artery stenosis, renal artery aneurysms, or fibromuscular dysplasia.
- No history of previous renal artery angioplasty or stenting.

STEP 6: Referral to Cath Lab Center Experienced in Performing RDN

F. Referral to cath lab center experienced in performing RDN

Medium-to-high volume institutions with cath lab experienced in performing RDN



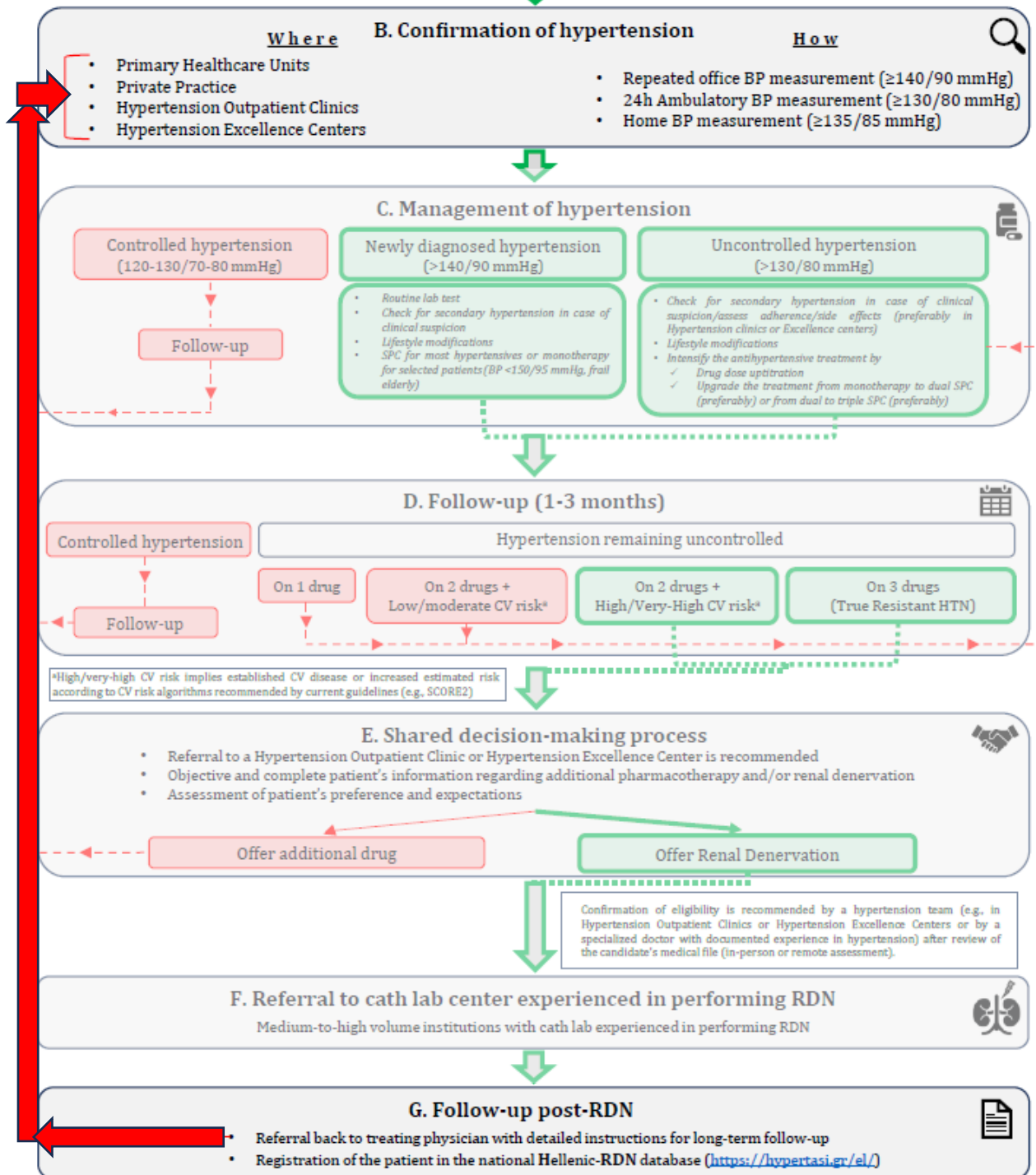
BOX 4 Minimum requirements for a medium-to high-volume RDN institution

- Availability of laboratory, inpatient ward, cardiac, or intensive care unit.
- Experience in interventional cardiology procedures (access sites, radioprotection measures, selective renal artery catheterization).
- Experience with periprocedural blood pressure management and analgesia/sedation.
- Performance of at least five proctored cases with each system intended to be used.
- Use of RDN devices that have demonstrated efficacy and safety in clinical studies.

The procedure should be performed by a highly skilled interventionalist with experience in renal artery interventions to avoid complications and minimize the risk of ineffective treatments related to suboptimal interventions

STEP 7: Follow-up Post-RDN

- After RDN, patients should be referred back to their treating physicians and be regularly followed up by them.
- Treating physicians will also be asked to register and insert their patients' data in the national **Hellenic-RDN database**.
- In this way, the scientific community will be informed about valuable aspects of the implementation of RDN in a pragmatic setting and treating physicians will be instructed on how to follow-up their patients and receive support if any query arises.



Conclusions

- The present consensus document establishes, for the first time, a structured referral pathway designed to optimize hypertension control rates by integrating all guideline-endorsed therapeutic options, including RDN, within the organizational framework of a national health care system.

