



Arquivos Brasileiros de Cardiologia

www.arquivosonline.com.br

Sociedade Brasileira de Cardiologia • ISSN-0066-782X • Volume 107, Nº 3, Suppl. 3, September 2016

7TH BRAZILIAN GUIDELINE OF ARTERIAL HYPERTENSION

7TH BRAZILIAN GUIDELINE OF ARTERIAL HYPERTENSION

Guideline Authors:

Malachias MVB, Souza WKS, Plavnik FL, Rodrigues CIS, Brandão AA, Neves MFT, Bortolotto LA, Franco RJS, Poli-de-Figueiredo CE, Jardim PCBV, Amodeo C, Barbosa ECD, Koch V, Gomes MAM, Paula RB, Póvoa RMS, Colombo FC, Ferreira Filho S, Miranda RD, Machado CA, Nobre F, Nogueira AR, Mion Júnior D, Kaiser S, Forjaz CLM, Almeida FA, Martim JFV, Sass N, Drager LF, Muxfeldt E, Bodanese LC, Feitosa AD, Malta D, Fuchs S, Magalhães ME, Oigman W, Moreira Filho O, Pierin AMG, Feitosa GS, Bortolotto MRFL, Magalhães LBNC, Silva ACS, Ribeiro JM, Borelli FAO, Gus M, Passarelli Júnior O, Toledo JY, Salles GF, Martins LC, Jardim TSV, Guimarães ICB, Antonello IC, Lima Júnior E, Matsudo V, Silva GV, Costa LS, Alessi A, Scala LCN, Coelho EB, Souza D, Lopes HF, Gowdak MMG, Cordeiro Júnior AC, Torloni MR, Klein MRST, Nogueira PK, Lotaif LAD, Rosito GBA, Moreno Júnior H

Scientific Director

Raul Dias dos Santos Filho

Chief Editor

Luiz Felipe P. Moreira

Associated Editors

Clinical Cardiology

José Augusto Barreto-Filho

Surgical Cardiology

Paulo Roberto B. Evora

Interventionist Cardiology

Pedro A. Lemos

Pediatric/Congenital Cardiology

Antonio Augusto Lopes

Arrhythmias/Pacemaker

Mauricio Scanavacca

Non-Invasive Diagnostic Methods

Carlos E. Rochitte

Basic or Experimental Research

Leonardo A. M. Zornoff

Epidemiology/Statistics

Lucia Campos Pellanda

Arterial Hypertension

Paulo Cesar B. V. Jardim

Ergometrics, Exercise and Cardiac Rehabilitation

Ricardo Stein

First Editor (1948-1953)

† Jairo Ramos

Editorial Board

Brazil

Aguinaldo Figueiredo de Freitas Junior (GO)
Alfredo José Mansur (SP)
Aloir Queiroz de Araújo Sobrinho (ES)
Amanda G. M. R. Sousa (SP)
Ana Clara Tude Rodrigues (SP)
André Labrunie (PR)
Andrei Sposito (SP)
Angelo A. V. de Paola (SP)
Antonio Augusto Barbosa Lopes (SP)
Antonio Carlos C. Carvalho (SP)
Antônio Carlos Palandri Chagas (SP)
Antonio Carlos Pereira Barretto (SP)
Antonio Cláudio L. Nóbrega (RJ)
Antonio de Padua Mansur (SP)
Ari Timerman (SP)
Armênio Costa Guimarães (BA)
Ayrton Pires Brandão (RJ)
Beatriz Matsubara (SP)
Brivaldo Markman Filho (PE)
Bruno Caramelli (SP)
Carisi A. Polanczyk (RS)
Carlos Eduardo Rochitte (SP)
Carlos Eduardo Suaide Silva (SP)
Carlos Vicente Serrano Júnior (SP)
Celso Amodeo (SP)
Charles Mady (SP)
Claudio Gil Soares de Araujo (RJ)
Cláudio Tinoco Mesquita (RJ)
Cleonice Carvalho C. Mota (MG)
Clerio Francisco de Azevedo Filho (RJ)
Dalton Bertolim Prêcoma (PR)
Dário C. Sobral Filho (PE)
Décio Mion Junior (SP)
Denilson Campos de Albuquerque (RJ)
Djair Brindeiro Filho (PE)
Domingo M. Braille (SP)
Edmar Atik (SP)
Emilio Hideyuki Moriguchi (RS)

Enio Buffolo (SP)
Eulógio E. Martinez Filho (SP)
Evandro Tinoco Mesquita (RJ)
Expedito E. Ribeiro da Silva (SP)
Fábio Vilas-Boas (BA)
Fernando Bacal (SP)
Flávio D. Fuchs (RS)
Francisco Antonio Helfenstein Fonseca (SP)
Gilson Soares Feitosa (BA)
Gláucia Maria M. de Oliveira (RJ)
Hans Fernando R. Dohmann (RJ)
Humberto Villacorta Junior (RJ)
Ínes Lessa (BA)
Iran Castro (RS)
Jarbas Jakson Dinkhuysen (SP)
João Pimenta (SP)
Jorge Ilha Guimarães (RS)
José Antonio Franchini Ramires (SP)
José Augusto Soares Barreto Filho (SE)
José Carlos Nicolau (SP)
José Lázaro de Andrade (SP)
José Pérciles Esteves (BA)
Leonardo A. M. Zornoff (SP)
Leopoldo Soares Piegas (SP)
Lucia Campos Pellanda (RS)
Luís Eduardo Rohde (RS)
Luís Cláudio Lemos Correia (BA)
Luiz A. Machado César (SP)
Luiz Alberto Piva e Mattos (SP)
Marcia Melo Barbosa (MG)
Marcus Vinícius Bolívar Malachias (MG)
Maria da Consolação V. Moreira (MG)
Mario S. S. de Azeredo Coutinho (SC)
Maurício I. Scanavacca (SP)
Max Grinberg (SP)
Michel Batlouni (SP)
Murilo Foppa (RS)
Nadine O. Claussell (RS)
Orlando Campos Filho (SP)
Otávio Rizzi Coelho (SP)

Otoni Moreira Gomes (MG)
Paulo Andrade Lotufo (SP)
Paulo Cesar B. V. Jardim (GO)
Paulo J. F. Tucci (SP)
Paulo R. A. Caramori (RS)
Paulo Roberto B. Évora (SP)
Paulo Roberto S. Brofman (PR)
Pedro A. Lemos (SP)
Protásio Lemos da Luz (SP)
Reinaldo B. Bestetti (SP)
Renato A. K. Kalil (RS)
Ricardo Stein (RS)
Salvador Rassi (GO)
Sandra da Silva Mattos (PE)
Sandra Fuchs (RS)
Sergio Timerman (SP)
Silvio Henrique Barberato (PR)
Tales de Carvalho (SC)
Vera D. Aiello (SP)
Walter José Gomes (SP)
Weimar K. S. B. de Souza (GO)
William Azem Chalela (SP)
Wilson Mathias Junior (SP)

Exterior

Adelino F. Leite-Moreira (Portugal)
Alan Maisel (Estados Unidos)
Aldo P. Maggioni (Itália)
Cândida Fonseca (Portugal)
Fausto Pinto (Portugal)
Hugo Grancelli (Argentina)
James de Lemos (Estados Unidos)
João A. Lima (Estados Unidos)
John G. F. Cleland (Inglaterra)
Maria Pilar Tornos (Espanha)
Pedro Brugada (Bélgica)
Peter A. McCullough (Estados Unidos)
Peter Libby (Estados Unidos)
Piero Anversa (Itália)

Sociedade Brasileira de Cardiologia

President

Marcus Vinícius Bolívar Malachias

Vice-President

Eduardo Nagib Gaudi

Scientific Director

Raul Dias dos Santos Filho

Financial Director

Gláucia Maria Moraes Oliveira

Administrative Director

Denilson Campos de Albuquerque

Government Liaison Director

Renault Mattos Ribeiro Júnior

Information Technology Director

Osni Moreira Filho

Communication Director

Celso Amodeo

Research Director

Leandro Ioshpe Zimerman

Assistance Quality Director

Walter José Gomes

Specialized Departments Director

João David de Sousa Neto

State and Regional Relations Director

José Luis Aziz

Cardiovascular Health Promotion Director - SBC/Funcor

Weimar Kunz Sebba Barroso de Souza

General Ombudsman

Lázaro Fernandes de Miranda

Chief Editor of the Brazilian Archives of Cardiology

Luiz Felipe P. Moreira

Governador - ACC Brazil Chapter

Roberto Kalil Filho

Adjunct Coordination

International Relations Coordinator

David de Pádua Brasil

Universidade Corporativa Coordinator

Gilson Soares Feitosa Filho

Standards and Guidelines Coordinator

José Francisco Kerr Saraiva

Cardiovascular Records Coordinator

Otávio Rizzi Coelho

Professional Valuation Coordinator

Carlos Japhet da Matta Albuquerque

New Projects Coordinator

Fernando Augusto Alves da Costa

Continuing Education Coordinator

Marcelo Westerlund Montera e Rui Manuel dos Santos Póvoa

Strategic Planning Council

Andrea Araújo Brandão, Ari Timeman, Dalton Bertolin Precoma, Fábio Biscegli Jatene

SBC Newsletter Editor

Carlos Eduardo Suaide Silva

Presidents of State and Regional Brazilian Societies of Cardiology

SBC/AL – Pedro Ferreira de Albuquerque

SBC/AM – Marcelo Mouco Fernandes

SBC/BA – Nivaldo Menezes Filgueiras Filho

SBC/CE – Sandro Salgueiro Rodrigues

SBC/CO – Danilo Oliveira de Arruda

SBC/DF – José Roberto de Mello Barreto Filho

SBC/ES – Bruno Moulin Machado

SBC/GO – Aguinaldo Figueiredo Freitas Jr.

SBC/MA – Márcio Mesquita Barbosa

SBC/MG – José Carlos da Costa Zanon

SBC/MS – Delcio Gonçalves da Silva Junior

SBC/MT – Max Wagner de Lima

SBC/NNE – Claudine Maria Alves Feio

SBC/PA – Sônia Conde Cristino

SBC/PE – Paulo Sérgio Rodrigues Oliveira

SBC/PB – Miguel Pereira Ribeiro

SBC/PI – Wildson de Castro Gonçalves Filho

SBC/PR – Gerson Luiz Bredt Júnior

SBC/RJ (SOCERJ) – Ricardo Mourilhe Rocha

SBC/RN – Maria de Fátima Azevedo

SBC/RO (SOCERON) – João Roberto Gemelli

SBC/RS (SOCERGS) – Gustavo Glotz de Lima

SBC/SC – Maria Emilia Lueneberg

SBC/SE – Sergio Costa Tavares Filho

SBC/SP (SOCESP) – Ibraim Masciarelli Francisco Pinto

SBC/TO – Andrés Gustavo Sánchez

Presidents of the Specialized Departments and Study Groups

SBC/DA – André Arpad Faludi

SBC/DCC – José Carlos Nicolau

SBC/DCC/CP – Maria Angélica Binotto

SBC/DCM – Elizabeth Regina Giunco Alexandre

SBC/DECAGE – José Maria Peixoto

SBC/DEIC – Luis Eduardo Paim Rohde

SBC/DERC – Salvador Manoel Serra

SBC/DFCVR – João Jackson Duarte

SBC/DHA – Eduardo Costa Duarte Barbosa

SBC/DIC – Samira Saady Morhy

SBCCV – Fabio Biscegli Jatene

SBHCI – Marcelo José de Carvalho Cantarelli

SOBRAC – Denise Tessariol Hachul

GAPO – Bruno Caramelli

GECC – Mauricio Wajngarten

GECESP – Daniel Jogaib Daher

GECETI – Gilson Soares Feitosa Filho

GECHOSP – Evandro Tinoco Mesquita

GEICIP – Gisela Martina Bohns Meyer

GENC – Andréa Maria Gomes Marinho Falcão

GECCO – Roberto Kalil Filho

GECCABE – José Antônio Marin Neto

GECCG – Nelson Samesima

GECCPED – Estela Azeka

GEMCA – Álvaro Avezum Junior

GEMIC – Felix Jose Alvarez Ramires

GERCPM – Tales de Carvalho

GERTC – Marcello Zapparoli

GETAC – João David de Souza Neto

GEVAL – Luiz Francisco Cardoso

Volume 107, Nº 3, September 2016

Indexing: ISI (Thomson Scientific), Cumulated Index Medicus (NLM), SCOPUS, MEDLINE, EMBASE, LILACS, SciELO, PubMed



Address: Av. Marechal Câmara, 160 - 3º andar - Sala 330
20020-907 • Centro • Rio de Janeiro, RJ • Brasil

Phone.: (21) 3478-2700
E-mail: arquivos@cardiol.br
www.arquivosonline.com.br
SciELO: www.scielo.br

Commercial Department

Phone: (11) 3411-5500
E-mail: comerciaisp@cardiol.br

Editorial Production

SBC - Internal Publication Department

Graphic Design and Diagramming

SBC - Internal Design Department

The ads showed in this issue are of the sole responsibility of advertisers, as well as the concepts expressed in signed articles are of the sole responsibility of their authors and do not necessarily reflect the views of SBC.

This material is for exclusive distribution to the medical profession. The Brazilian Archives of Cardiology are not responsible for unauthorized access to its contents and that is not in agreement with the determination in compliance with the Collegiate Board Resolution (DRC) N. 96/08 of the National Sanitary Surveillance Agency (ANVISA), which updates the technical regulation on Drug Publicity, Advertising, Promotion and Information. According to Article 27 of the insignia, "the advertisement or publicity of prescription drugs should be restricted solely and exclusively to health professionals qualified to prescribe or dispense such products (...)".

To ensure universal access, the scientific content of the journal is still available for full and free access to all interested parties at:
www.arquivosonline.com.br.



Filiada à Associação
Médica Brasileira

Support



Ministério da
Educação

Ministério da
Ciência e Tecnologia



Summary

Chapter 1 - Concept, Epidemiology and Primary Prevention	page 1
Concept	page 1
Medical and social impact of arterial hypertension	page 1
Arterial hypertension and cardiovascular disease in Brazil	page 1
Prevalence of arterial hypertension	page 1
Knowledge, treatment and control	page 3
Prehypertension	page 3
Risk factors for arterial hypertension.....	page 3
Age.....	page 3
Sex and ethnicity	page 3
Overweight and obesity	page 4
Salt intake	page 5
Alcohol intake	page 5
Sedentary lifestyle	page 5
Socioeconomic factors	page 5
Genetics.....	page 5
Strategies for the implementation of preventive measures	page 5
References	page 5
Chapter 2 - Diagnosis and Classification	page 7
Introduction	page 7
Measurement of BP	page 7
In the office	page 7
Patient's preparation:	page 7
Steps of BP measurement	page 7
Outside-the-office BP measurement	page 8
Measurement of BP in children, elderly, obese and pregnant individuals	page 9
Children	page 9
Elderly	page 9
Obese individuals	page 10
Pregnant women	page 10
Recommendations for diagnosis and follow-up	page 10
Home BP measurement	page 10
Ambulatory BP monitoring	page 11
Classification	page 11
Hypertension	page 11
Normal blood pressure	page 11
Prehypertension	page 11
White-coat effect	page 11
White-coat hypertension	page 11
Masked hypertension	page 11
Isolated systolic hypertension	page 12
References	page 13
Chapter 3 - Clinical and Complementary Assessment	page 14
Clinical history and objectives	page 14
Clinical assessment	page 14
Clinical history	page 14
Physical examination	page 14
Basic laboratory investigation, assessment of subclinical and clinical target-organ damage	page 14
References	page 16
Chapter 4 - Cardiovascular Risk Stratification	page 18
Introduction	page 18
Additional cardiovascular risk stratification	page 18

Global cardiovascular risk stratification	page 18
Identification of atherosclerotic disease or of its equivalents	page 18
Global risk score analysis	page 19
Risk reclassification based on the presence of aggravating factors	page 19
References	page 23
Chapter 5 - Therapeutic Decision and Targets	page 25
Introduction	page 25
Treatment decision making	page 25
Approach to stages 2 and 3 and/or high-risk hypertensives	page 25
Approach to stage 1 hypertensives at low and intermediate risk	page 25
Approach to BP levels of 130-139/85-89 mm Hg	page 25
Approach to hypertensive elderly	page 26
Approach to youngsters with isolated systolic hypertension	page 26
BP targets	page 26
References	page 28
Chapter 6 - Non-pharmacological treatment	page 30
Introduction	page 30
Body weight	page 30
Nutritional aspects	page 30
Dietary pattern	page 30
Reduction in sodium intake	page 30
Unsaturated fatty acids	page 30
Fibers	page 30
Nuts	page 30
Dairy products and vitamin D	page 30
Garlic	page 30
Coffee and green tea	page 30
Bitter chocolate	page 31
Alcohol	page 31
Physical activity/physical exercise	page 31
Physical inactivity/activity	page 31
Physical exercise	page 31
Aerobic exercise	page 31
Dynamic and static resistance exercise	page 31
Caution	page 31
Smoking cessation	page 32
Slow breathing	page 32
Stress control	page 32
Multiprofessional team	page 32
References	page 33
Chapter 7 – Pharmacological Treatment	page 35
Objectives	page 35
General principles of the pharmacological treatment	page 35
Choice of the medication	page 35
General characteristics of antihypertensive drugs	page 35
Diuretics	page 35
Adverse effects	page 35
Central action agents	page 35
Adverse effects	page 36
Beta-blockers	page 36
Adverse effects	page 36
Alpha-blockers	page 36
Adverse effects	page 36

Direct acting vasodilators	page 36
Adverse effects	page 36
Calcium-channel blockers	page 36
Adverse effects	page 37
Angiotensin-converting-enzyme inhibitors	page 37
Adverse effects	page 37
Angiotensin II AT1 receptor blockers	page 37
Adverse effects	page 37
Direct renin inhibitors	page 37
Adverse effects	page 37
The beginning of pharmacological treatment	page 37
Therapeutic schemes	page 37
Monotherapy	page 37
Combination of drugs	page 39
Particularities of the associations	page 39
References	page 40
Chapter 8 - Hypertension and Associated Clinical Conditions	page 44
Diabetes mellitus	page 44
Metabolic syndrome	page 44
Coronary artery disease	page 44
Stroke	page 44
Pharmacological treatment of AH in the patient with previous stroke	page 44
Chronic kidney disease	page 44
Choice of antihypertensive drug: stage 1 to 5 chronic kidney disease on conservative treatment	page 45
Approach to stage 5 chronic kidney disease on kidney replacement therapy	page 45
References	page 46
Chapter 9 - Arterial Hypertension in pregnancy	page 49
Epidemiology	page 49
Classification	page 49
Concept and diagnosis criteria	page 49
Preeclampsia prevention	page 49
Nonpharmacological treatment	page 49
Expectant management	page 50
Pharmacological treatment	page 50
Other important aspects	page 50
Antihypertensive treatment in lactating women	page 50
References	page 51
Chapter 10 - Hypertension in Children and Adolescents	page 53
Epidemiological context and importance of hypertension in pediatrics	page 53
Definitions and diagnosis	page 53
Definition and etiology	page 53
Diagnosis	page 53
Method for BP measurement	page 53
Anamnesis	page 54
Physical examination	page 54
Complementary tests	page 54
Therapeutic aspects	page 54
Nonpharmacological management	page 54
Pharmacological management	page 54
Hypertensive crisis	page 58
References	page 62
Chapter 11 - Arterial Hypertension in the elderly	page 64
References	page 65

Chapter 12 - Secondary Arterial Hypertension	page 67
Introduction	page 67
Chronic kidney disease.....	page 67
Renovascular hypertension	page 67
Obstructive sleep apnea-hypopnea syndrome	page 68
Primary hyperaldosteronism	page 69
Pheochromocytomas	page 70
Other endocrine causes.....	page 71
Hypothyroidism	page 71
Hyperthyroidism	page 71
Hyperparathyroidism	page 71
Cushing's syndrome	page 71
Acromegaly	page 71
Coarctation of the aorta	page 71
Drug-induced AH	page 72
References	page 73
Chapter 13 - Resistant Arterial Hypertension	page 75
Definition and epidemiology	page 75
Associated factors	page 75
Diagnostic investigation	page 75
Pseudoresistance	page 75
Complementary tests	page 75
Secondary causes	page 75
ABPM and HBPM.....	page 75
Treatment	page 75
Non-pharmacological treatment.....	page 75
Pharmacological treatment.....	page 76
New therapeutic strategies	page 76
Direct and chronic stimulation of carotid sinus baroreceptors	page 76
Renal sympathetic denervation	page 76
Use of CPAP	page 76
Central iliac arteriovenous anastomosis.....	page 77
Prognosis	page 77
References	page 77
Chapter 14 – Hypertensive Crisis	page 79
Definition	page 79
Classification.....	page 79
Major epidemiological, pathophysiological and prognostic aspects	page 79
Epidemiology.....	page 79
Pathophysiology.....	page 79
Prognosis	page 79
Complementary clinical and laboratory investigation	page 79
General treatment of hypertensive crisis	page 79
Hypertensive emergency in special situations	page 80
Stroke	page 80
Hemorrhagic stroke ¹²	page 80
Ischemic stroke ¹³	page 80
Acute coronary syndromes	page 80
Unstable angina / non-ST elevation MI / ST elevation MI ^{14,15}	page 80
Acute pulmonary edema	page 80
Acute aortic dissection	page 82
Use of illicit substances.....	page 82
Rapidly progressive acute kidney injury.....	page 82
References	page 82



7TH Brazilian Guideline of Arterial Hypertension

AUTHORS

Marcus Vinícius Bolívar Malachias, Weimar Kunz Sebba Barroso de Souza, Frida Liane Plavnik, Cibele Isaac Saad Rodrigues, Andrea Araujo Brandão, Mário Fritsch Toros Neves, Luiz Aparecido Bortolotto, Roberto Jorge da Silva Franco, Carlos Eduardo Poli de Figueiredo, Paulo César Brandão Veiga Jardim, Celso Amodeo, Eduardo Costa Duarte Barbosa, Vera Koch, Marco Antonio Mota Gomes, Rogério Baumgratz de Paula, Rui Manuel dos Santos Póvoa, Fernanda Consolim Colombo, Sebastião Ferreira Filho, Roberto Dischinger Miranda, Carlos Alberto Machado, Fernando Nobre, Armando da Rocha Nogueira, Décio Mion Júnior, Sergio Kaiser, Cláudia Lúcia de Moraes Forjaz, Fernando Antonio Almeida, José Fernando Vilela Martim, Nelson Sass, Luciano Ferreira Drager, Elizabeth Muxfeldt, Luiz Carlos Bodanese, Audes Diógenes Feitosa, Deborah Malta, Sandra Fuchs, Maria Eliane Magalhães, Wille Oigman, Osni Moreira Filho, Angela Maria Geraldo Pierin, Gilson Soares Feitosa, Maria Rita de Figueiredo Lemos Bortolotto, Lucélia Batista Neves Cunha Magalhães, Ana Cristina Simões e Silva, José Marcio Ribeiro, Flávio Antonio de Oliveira Borelli, Miguel Gus, Oswaldo Passarelli Júnior, Juan Yugar Toledo, Gil Fernando Salles, Luis Cuadrado Martins, Thiago de Souza Veiga Jardim, Isabel Cristina Britto Guimarães, Ivan Carlos Antonello, Emilton Lima Júnior, Victor Matsudo, Giovania Vieira da Silva, Lillian Soares da Costa, Alexandre Alessi, Luiz César Nazário Scala, Eduardo Barbosa Coelho, Dilma de Souza, Heno Ferreira Lopes, Marcia Maria Godoy Gowdak, Antonio Carlos Cordeiro Júnior, Maria Regina Torloni, Marcia Regina Simas Torres Klein, Paulo Koch Nogueira, Leda Aparecida Daud Lotaif, Guido Bernardo Aranha Rosito, Heitor Moreno Júnior

REALIZATION

Sociedade Brasileira de Cardiologia (SBC), Sociedade Brasileira de Hipertensão (SBH), Sociedade Brasileira de Nefrologia (SBN)

GENERAL COORDINATOR OF 7TH BRAZILIAN GUIDELINE OF ARTERIAL HYPERTENSION

Marcus Vinícius Bolívar Malachias

WORK GROUPS

Chapter 1 - Concept, Epidemiology and Primary Prevention

Coordinator: Frida Liane Plavnik

Deputy Coordinator: Carlos Alberto Machado

Participants: Deborah Malta; Luiz César Nazário Scala; Sandra Fuchs.

DOI: 10.5935/abc.20160151

Chapter 2 - Diagnosis and Classification

Coordinator: Marco Antonio Mota Gomes

Deputy Coordinator: Fernando Nobre

Participants: Alexandre Alessi; Audes Diógenes Feitosa; Eduardo Barbosa Coelho.

DOI: 10.5935/abc.20160152

Chapter 3 - Clinical and Complementary Assessment

Coordinator: Rui Manuel dos Santos Póvoa

Deputy Coordinator: Armando da Rocha Nogueira

Participants: Dilma de Souza; Lillian Soares da Costa; Maria Eliane Magalhães.

DOI: 10.5935/abc.20160153

Chapter 4 - Cardiovascular Risk Stratification

Coordinator: Mário Fritsch Toros Neves

Deputy Coordinator: Décio Mion Júnior

Participants: Giovanio Vieira da Silva; Heno Ferreira Lopes; Wille Oigman.

DOI: 10.5935/abc.20160154

Chapter 5 - Therapeutic Decision and Targets

Coordinator: Andrea Araujo Brandão

Deputy Coordinator: Sergio Kaiser

Participant: Osni Moreira Filho

DOI: 10.5935/abc.20160155

Chapter 6 - Non-pharmacological treatment

Coordinator: Roberto Jorge da Silva Franco

Deputy Coordinator: Cláudia Lúcia de Moraes Forjaz

Participants: Angela Maria Geraldo Pierin; Marcia Maria Godoy Gowdak; Marcia Regina Simas Torres Klein; Victor Matsudo.

DOI: 10.5935/abc.20160156

Chapter 7 – Pharmacological Treatment

Coordinator: Paulo César Veiga Jardim

Deputy Coordinator: Fernando Antonio Almeida

Participants: Emilton Lima Júnior; Gilson Soares Feitosa.

DOI: 10.5935/abc.20160157

Chapter 8 - Hypertension and Associated Clinical Conditions

Coordinator: Celso Amodeo

Deputy Coordinator: Rogério Baumgratz de Paula

Participants: Antonio Carlos Cordeiro Júnior; Lucélia Batista Neves Cunha Magalhaes; Luiz Carlos Bodanese.

DOI: 10.5935/abc.20160158

Chapter 9 - Arterial Hypertension in Pregnancy

Coordinator: Carlos Eduardo Poli de Figueiredo

Deputy Coordinator: Nelson Sass

Participants: Ivan Carlos Antonello; Maria Regina Torloni; Maria Rita de Figueiredo Lemos Bortolotto.

DOI: 10.5935/abc.20160159

Chapter 10 - Hypertension in Children and Adolescents

Coordinator: Vera Koch

Deputy Coordinator: Fernanda Consolim Colombo

Participants: Ana Cristina Simões e Silva; Isabel Cristina Britto Guimarães; Paulo Koch Nogueira.

DOI: 10.5935/abc.20160160

Chapter 11 - Arterial Hypertension in the Elderly

Coordinator: Sebastião Ferreira Filho

Deputy Coordinator: Weimar Kunz Sebba Barroso de Souza

Participants: José Marcio Ribeiro; Roberto Dischinger Miranda; Thiago de Souza Veiga Jardim.

DOI: 10.5935/abc.20160161

Chapter 12 - Secondary Arterial Hypertension

Coordinator: Luiz Aparecido Bortolotto

Deputy Coordinator: Luciano Ferreira Drager

Participants: Flávio Antonio de Oliveira Borelli; Leda Aparecida Daud Lotaif; Luis Cuadrado Martins.

DOI: 10.5935/abc.20160162

Chapter 13 - Resistant Arterial Hypertension

Coordinator: Cibele Isaac Saad Rodrigues

Deputy Coordinator: Elizabeth Muxfeldt

Participants: Gil Fernando Salles; Heitor Moreno Júnior; Miguel Gus.

DOI: 10.5935/abc.20160163

Chapter 14 – Hypertensive Crisis

Coordinator: Eduardo Costa Duarte Barbosa

Deputy Coordinator: José Fernando Vilela Martim

Participants: Guido Bernardo Aranha Rosito; Juan Yugar Toledo; Oswaldo Passarelli Júnior.

DOI: 10.5935/abc.20160164

The guideline should be cited as:

Malachias MVB, Souza WKS, Plavnik FL, Rodrigues CIS, Brandão AA, Neves MFT, et al. 7th Brazilian Guideline of Arterial Hypertension. Arq Bras Cardiol 2016; 107(3Suppl.3):1-83

Mailing Address:

Sociedade Brasileira de Cardiologia Av. Marechal Câmara, 360/330 – Centro – Rio de Janeiro – Postal Code: 20020-907
e-mail: scb@cardiol.br

Declaration of potential conflict of interest of authors/collaborators of 7th Brazilian Guideline of Arterial Hypertension

If the last three years the author/developer of the Guidelines:

Names Members of the Policy	Participated in clinical studies and / or experimental trials supported by pharmaceutical or equipment related to the guideline in question	Has spoken at events or activities sponsored by industry related to the guideline in question	It was (is) advisory board member or director of a pharmaceutical or equipment	Committees participated in completion of research sponsored by industry	Personal or institutional aid received from industry	Produced scientific papers in journals sponsored by industry	It shares the industry
Alexandre Alessi	No	No	No	No	No	No	No
Ana Cristina Simões e Silva	No	No	No	No	No	No	No
Andrea Araujo Brandão	Novartis	Biolab, Daiichi Sankyo, Novartis, Servier	No	No	Biolab, Daiichi Sankyo, Novartis, Servier	Biolab, Novartis, Servier, SEM	No
Angela Maria Geraldo Pierin	No	No	No	No	No	No	No
Antonio Carlos Cordeiro Júnior	No	No	No	No	No	No	No
Armando da Rocha Nogueira	No	No	No	No	No	No	No
Audes Diógenes Feitosa	No	No	No	No	No	No	No
Carlos Alberto Machado	No	No	No	No	No	No	No
Carlos Eduardo Poli de Figueiredo	No	No	No	No	No	No	No
Celso Amodeo	Servier	No	Biolab	Servier	Ache, Servier, Merck Serona, AstraZeneca, Biolab	Novartis	No
Cibele Isaac Saad Rodrigues	No	No	No	No	No	No	No
Cláudia Lúcia de Moraes Forjaz	No	No	No	No	No	No	No
Fernando Antonio Almeida	No	No	No	No	No	No	No
Frida Liane Plavnik	No	No	No	No	No	No	No
Paulo César Veiga Jardim	No	Biolab - Servier - Novartis - Aché	No	No	Servier, Ministério da Ciência, CNPq	No	No
Deborah Malta	No	No	No	No	No	No	No
Décio Mion Júnior	No	No	No	No	No	No	No
Dilma do Socorro Moraes de Souza	No	No	No	No	No	No	No
Eduardo Barbosa Coelho	No	No	No	No	No	No	No
Eduardo Costa Duarte Barbosa	Novartis, Servier, MSD, Takeda, Amgen, AstraZeneca, Pfizer	No	No	No	Servier, Biolab	No	No
Elizabeth Muxfeldt	No	No	No	No	No	No	No
Emilton Lima Júnior	No	Biolab	No	No	No	No	No
Fernanda Consolim Colombo	Ache, Novartis	Daiichi Sankyo, Servier, Merck, Boehringer, Novartis	No	No	No	Libbs, Merck	No
Fernando Nobre	No	Novartis Biociências, Merck Soreno, SEM, Sanofi-Aventi, Libbs Farmacêutica	No	Novartis Biociências, Libbs Farmacêutica	Sanofi-Aventis, Libbs Farmacêutica	SEM, Novartis Biociências, Biolab, Torrent, Bayer, Libbs Farmacêutica	No

Flávio Antonio de Oliveira Borelli	No	Servier	No	No	No	No	No
Gil Fernando Salles	No	No	No	No	No	No	No
Gilson Soares Feitosa	No	No	No	No	No	No	No
Giovanio Vieira da Silva	No	No	No	No	No	No	No
Guido Bernardo Aranha Rosito	No	No	No	No	No	No	No
Heitor Moreno Júnior	No	No	No	No	No	No	No
Heno Ferreira Lopes	No	No	No	No	No	No	No
Isabel Cristina Britto Guimarães	No	No	No	No	No	No	No
Ivan Carlos Antonello	No	No	No	No	No	No	No
José Fernando Vilela Martim	No	No	No	No	No	No	No
José Marcio Ribeiro	No	Biolab, B Ingelheim, Pfizer	No	No	Servier	No	No
Juan Yugar Toledo	No	No	No	No	No	No	No
Leda Aparecida Daud Lotaif	No	No	No	No	No	No	No
Lilian Soares da Costa	No	No	No	No	No	No	No
Lucélia Batista Neves Cunha Magalhaes	No	No	No	No	No	No	No
Luciano Ferreira Drager	No	No	No	No	No	No	No
Luis Cuadrado Martins	No	No	No	No	No	No	No
Luiz Aparecido Bortolotto	Novartis	Servier, Biolab, Novartis	No	No	No	Biolab, Novartis, Servier, Baldacci	No
Luiz Carlos Bodanese	Sanofi, GSK, Roche	Sanofi, Novartis, Boehringer	No	Servier, Sanofi, ANGEM	Safoni, ANGEM, GSK	Pfizer	No
Luiz Cesar Nazario Scala	No	No	No	No	No	No	No
Marcia Maria Godoy Gowdak	No	No	No	No	No	No	No
Marcia Regina Simas Torres Klein	No	No	No	No	No	No	No
Marco Antonio Mota Gomes	Novartis, AstraZeneca, Biolab, Daiichi Sankyo, Takeda, Torrent, Libbs, Pfizer, Janssen, Cardios, Omron	No	No	No	No	No	No
Marcus Vinícius Bolívar Malachias	No	Biolab, Chiesi, Medley-Sanofi, Novartis, Pfizer	No	No	No	Biolab, Boehringer- Ingelheim, Novartis	No
Maria Eliane Magalhães	AstraZeneca, Novartis, Sanofi- Aventis, Daiichi Sankyo	AstraZeneca, Pfizer, Sanofi- Aventis, MSD, Chiesi	No	No	AstraZeneca, Pfizer, MSD, Novartis	No	No
Maria Regina Torloni	No	No	No	No	No	No	No
Maria Rita de Figueiredo Lemos Bortolotto	No	No	No	No	No	No	No
Mário Fritsch Toros Neves	Novartis, Servier, AstraZeneca, Pfizer, Sanofi, Libbs	No	Novartis, Servier	No	No	No	No
Miguel Gus	No	No	No	No	No	No	No
Nelson Sass	No	No	No	No	No	No	No

Osni Moreira Filho	No	No	No	No	Biolab, Pfizer, Novartis	EMS	No
Oswaldo Passarelli Júnior	Biolab, Novartis, Daiichi Sankyo						
Paulo Koch Nogueira	No	No	No	No	No	No	No
Roberto Dischinger Miranda	Aché, Astra Zeneca, Bayer, Biolab, Boeringher, Ingelheim, MSD, Novartis, Pfizer	No	Bayer, Novartis, Pfizer	No	No	No	No
Roberto Jorge da Silva Franco	No	No	No	No	No	No	No
Rogério Baumgratz de Paula	No	No	No	No	No	No	No
Rui Manuel dos Santos Póvoa	No	No	No	No	No	No	No
Sandra Fuchs	No	No	No	No	No	No	No
Sebastião Ferreira Filho	No	No	No	No	No	No	No
Sergio Kaiser	Bristol-Myers-Squibb, Novaquimica, Abbott	No	No	No	No	No	No
Thiago de Souza Veiga Jardim	Novartis, Astra Zeneca	Biolab, Daiichi Sankyo, Novartis, Astra Zeneca, Servier			Daiichi Sankyo, Servier	Daiichi Sankyo	
Vera Koch	No	No	No	No	No	No	No
Victor Matsudo	No	No	No	Instituto Actigraph	No	No	No
Weimar Kunz Sebba Barroso de Souza	Amgen, AstraZeneca, Bayer, Boehringer, Johnson & Johnson, Lilly, Merck Sharp Dhome, Novartis, Pfizer, Roche, Sanofi Aventis, Daiichi Sankyo, Torrent	AstraZeneca, Biolab, Boehringer, Lilly, Servier, Torrent	No	No	No	No	No
Wille Oigman Cobrei	Libbs	No	No	No	No	No	No

Introduction

On behalf of the Brazilian Society of Cardiology, Brazilian Society of Hypertension and Brazilian Society of Nephrology, I present to you the 7th Brazilian Guideline of Arterial Hypertension, result of the joint work of an expert team of renowned professionals appointed by their respective medical societies.

The production of this new guideline was necessary to update the knowledge accumulated over the past years, considering the Brazilian reality and clinical practice. The guidance and recommendations contained in this document reflect the evidence of the effectiveness of the interventions. The present text does not deal specifically with cost-effectiveness analyses. The major objective of the medical societies and authors is to guide health professionals on the preventive measures and care for individuals with arterial hypertension, aiming at reducing the complications of arterial hypertension, considered the major risk factor for cardiovascular disease.

The following table was used as reference for the grades of recommendation and levels of evidence.

Grades of recommendation:

Class I: Conditions to which there is conclusive evidence or at least general consensus concerning the safety and usefulness/efficacy of the intervention;

Class II: Conditions to which there is conflicting evidence and/or disagreement of opinion concerning the safety and usefulness/efficacy of the intervention;

Class IIa: Evidence/opinion in favor of the intervention. Most experts agree;

Class IIb: Less well-established safety and usefulness/efficacy, without predominance of favorable opinions on the intervention;

Class III: Conditions to which there is evidence and/or consensus that the intervention is not useful/effective, and, in some cases, even harmful.

Levels of evidence:

Level A: Data derived from multiple consistent randomized controlled clinical trials, and/or a robust meta-analysis of randomized clinical trials;

Level B: Data derived from a less robust meta-analysis, one single randomized trial or non-randomized trials (observational);

Level C: Data derived from consensual expert opinion.

We hope the concepts expressed in this guideline can be widely spread to a better and more comprehensive care of individuals with arterial hypertension.

Marcus Vinícius Bolívar Malachias

Abbreviations of the Brazilian Guideline of AH

ABI	Ankle-brachial index	ICU	Intensive care unit
ABPM	Ambulatory blood pressure monitoring	IDF	International Diabetes Federation
AC	Abdominal circumference	IGF-1	Insulin-like growth factor 1
ACC	American College of Cardiology	IHD	Ischemic heart diseases
ACEI	Angiotensin-converting-enzyme inhibitor	IMT	Intima-media thickness
ACTH	Adrenocorticotropin	IPEMs	State Departments of Weights and Measures
AH	Arterial hypertension	ISH	Isolated systolic hypertension
AHA	American Heart Association	IV	Intravenous
AHI	Apnea-hypopnea index	LVH	Left ventricular hypertrophy
AKI	Acute kidney injury	LVMI	Left ventricular mass index
Aldo	Aldosterone	MH	Masked hypertension
AMI	Acute myocardial infarction	MI	Myocardial infarction
APA	Aldosterone-producing adenoma	MIBG	Metaiodobenzylguanidine
APE	Acute pulmonary edema	MRI	Magnetic resonance imaging
ARB	Angiotensin II receptor blocker	MS	Metabolic syndrome
BB	Beta-blocker	NKF	National Kidney Foundation
BMI	Body mass index	NPT	Non-pharmacological treatment
BP	Blood pressure	OSAHS	<i>Obstructive sleep apnea-hypopnea syndrome</i>
CAD	Coronary artery disease	PAD	Peripheral arterial disease
CAH	Chronic arterial hypertension	PE	Preeclampsia
CbVD	Cerebrovascular diseases	PH	Prehypertension
CCB	Calcium-channel blocker	PHA	Primary hyperaldosteronism
CDC	Centers for Disease Control and Prevention	PHEO	Pheochromocytoma
CHF	Congestive heart failure	PNS	Brazilian National Health Survey
CKD	Chronic kidney disease	POF	Survey on Family Income
COPD	Chronic obstructive pulmonary disease	PP	Pulse pressure
CPAP	Continuous positive airway pressure	PRA	Plasma renin activity
CrCl	Creatinine clearance	PSNS	Parasympathetic nervous system
CS	Cushing's syndrome	PTH	Parathormone
CT	Computed tomography	PVR	Peripheral vascular resistance
CV	Cardiovascular	PWV	Pulse wave velocity
CVD	Cardiovascular disease	RAAS	Renin-angiotensin-aldosterone system
CVRF	Cardiovascular risk factor	RAH	Resistant arterial hypertension
DAH	Diastolic arterial hypertension	RBMLQ	Brazilian Legal Metrology and Quality Network
DBP	Diastolic blood pressure	RF	Risk factor
DHA	Docosahexaenoic acid	RVAH	Renovascular arterial hypertension
DIU	Diuretic	SAH	Systemic arterial hypertension
DM	Diabetes mellitus	SBP	Systolic blood pressure
EPA	Eicosapentaenoic acid	SNP	Sodium nitroprusside
GFR	Glomerular filtration rate	SNS	Sympathetic nervous system
GH	Growth hormone	SUS	Brazilian Unified Health Care System
GRS	Global Risk Score	TC	Total cholesterol
HbA1c	Glycated hemoglobin	TIA	Transient ischemic attack
HBPM	Home blood pressure monitoring	TOD	Target-organ damage
HC	Hypertensive crisis	TSH	Thyroid stimulating hormone
HD	Hypertensive diseases	UACR	Urine albumin/creatinine ratio
HDL-C	High-density lipoprotein cholesterol	US	Ultrasonography
HE	Hypertensive emergency	VIGITEL	Surveillance for Risk Factors and Protection Against Chronic Diseases via Telephone Inquiry
HF	Heart failure	WCE	White-coat effect
HR	Heart rate	WCH	White-coat hypertension
HU	Hypertensive urgency		