# Adoption of the 2017 American College of Cardiology/American Heart Association (ACC/AHA) Hypertension Guideline in Hong Kong and implications for local practice

**CH Wong *, MS Man, Thomas KW Lau, CY Wong, LK Fong, Valeria Deng Luo**

*The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong*

* Corresponding author: marcus.wch73@link.cuhk.edu.hk

Hong Kong Med J 2022;28:88–90
https://doi.org/10.12809/hkmj219636

## Introduction

The current Hong Kong reference framework of hypertension was set by the Primary Care Office of the Department of Health in 2010.[1] Patients with diabetes are advised to control their blood pressure below 130/80 mm Hg, whereas those without diabetes have a more lenient standard of 140/90 mm Hg.[1]

In 2017, the American College of Cardiology (ACC) and the American Heart Association (AHA) released an updated guideline to define hypertension.[2] The most striking change in the guideline was the threshold defining hypertension being revised from ≥140/90 mm Hg to ≥130/80 mm Hg. For patients with a past medical history of diabetes, acute coronary syndrome, chronic kidney disease, 10-year atherosclerotic cardiovascular disease risk higher than 10% and the elderly people, pharmacotherapy is recommended for patients with systolic blood pressure (SBP) ≥130 mm Hg; lifestyle modification is recommended for patients in this group with SBP ≥120 mm Hg or for secondary stroke prevention.[3] This lower threshold for the definition of hypertension allows early identification of at-risk individuals and thus earlier intervention before hypertension becomes irreversible or results in further complications.[4]

The application of the 2017 ACC/AHA guideline is controversial in Hong Kong, because of the increased burden on the healthcare system. As revealed by a cross-sectional study in China, the number of 45-to-75-year-old patients eligible for treatment under the benchmark of 130/80 mm Hg would increase from 41.4% to 76.2%, in contrast to from 24.0% to 54.4% increase in the United States.[5]

Lifestyle modification to prevent hypertension is simple for the patient,[6] and when patients reach the ≥130/80 mm Hg threshold, it is simple for family physicians to advise patients to make further modifications.[7]

## Current adoption of the 2017 ACC/AHA hypertension guideline in Hong Kong

To investigate the current adoption rate of the 2017 ACC/AHA guideline in Hong Kong, we surveyed Hong Kong physicians (online supplementary Tables 1 to 3). We found that the overall adoption rate is 84.1%. The most common reasons that respondents gave for 2017 ACC/AHA guideline adoption were that it helped to raise patients' awareness (61.6%) and that it was beneficial to patients' health (61.6%). We found correlations between the adoption rate and place of medical training, years of practice, and sector of practice. The adoption rate was lower for younger (aged ≤30 years) doctors (63.6%) and less experienced (≤10 years of practice) doctors (75.0%) compared with older doctors and those with longer experience. Doctors who worked in the private sector had a higher tendency to adopt the 2017 ACC/AHA guideline (89.5%) compared with those in the public sector. Doctors who received medical training outside Hong Kong also had a higher tendency to adopt the 2017 ACC/AHA guideline (94.4%).

## Limitations of adopting a lower hypertension threshold

A lowered hypertension threshold from 140/90 mm Hg to 130/80 mm Hg potentially subjects patients to the risk of overmedication. The 2017 ACC/AHA guideline recommends blood pressure-lowering medication for certain at-risk groups of patients with SBP ≥130/80 mm Hg, in addition to non-pharmacological therapy. However, severe adverse drug effects have been observed in some patients who received more intensive treatment.[8] Individualised treatment plans on top of the guideline are preferred in order to minimise the adverse reactions due to overmedication.[9]

 

Some doctors may be concerned that adopting the 2017 ACC/AHA guideline may result in overmedication or unnecessary psychological, economic, or social issues; however, these fears are unfounded. In the United States, application of the 2017 ACC/AHA guideline was predicted to increase the reported prevalence of hypertension from 31.9% to 45%; however, the associated increase in patients indicated for pharmacological treatment was predicted to increase from 34.3% to 36.2%; a rise of only 1.9%.[10] Patients with blood pressure in this range already have a risk of cardiovascular events (CV) risk 1.5 to 3 times higher than patients with SBP <120 mm Hg.[11] The 2018 European Society of Hypertension guideline, commonly adopted in Hong Kong, also advocates a target blood pressure for adult patients with SBP <130/80 mm Hg and associated complications such as stroke and coronary artery disease; this threshold is lower than the diagnostic classification of hypertension, and the at-risk groups that it applies to are similar to those included in the 2017 ACC/AHA guideline.

## Implications for local clinical practice and research

The prevalence of hypertension is likely to increase in Hong Kong, owing to the ageing population. Thus, a more forward-looking approach to the management of hypertension should be adopted in Hong Kong, with more focus on epidemiological issues. Our survey results show that the private sector in Hong Kong is already more inclined to adopt the 2017 ACC/AHA guideline.

Switching to 2017 ACC/AHA guideline may result in over-labelling patients as hypertensive, potentially leading to overmedication or unnecessary psychological, economic, and social outcomes. In Hong Kong, it may be challenging to implement such changes to achieve the lower blood pressure treatment goals (<130/80 mm Hg), especially among patients for whom hypertension control is suboptimal even at the currently practiced, more relaxed goal (<140/90 mm Hg).

Early intervention eliminates potential medical costs when complications arise. The characteristics of patients labelled "stage 1 hypertension" are mostly younger, male, and obese.[12] At the early stage, hypertension is easily manageable via lifestyle modifications, particularly in younger patients. Moreover, blood pressure control rates are generally better in younger patients and do not require pharmacological treatment.[13] This reduces the risk of serious adverse events such as hypotension or electrolyte disturbances.

## Conclusions

A medical guideline is devised for the benefit of patients and the essence of it lies in the scientific evidence of the health implications. Resource allocation and outcome morbidity after an update of the guideline should have a neutral effect on the update. The 2017 ACC/AHA guideline is a helpful tool for early identification of at-risk individuals. Good hypertension control is profitable to the healthcare system, with consequent reductions in hypertension-related complications and medical costs.

The typical dietary pattern in Hong Kong includes high levels of animal products and salt, which are risk factors for hypertension, and some gene variants related to hypertension are common in the Chinese population. Considering these factors, further studies are needed to ascertain the appropriate hypertension threshold that is applicable for Hong Kong population. Moreover, the hypertension guideline should be constantly reviewed in the future according to advancements in research findings.

### Author contributions

All authors contributed to the concept or design of the study, acquisition, analysis, and interpretation of the data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

### Conflicts of interest

All authors have disclosed no conflicts of interest.

### Acknowledgement

We would like to thank Prof Martin CS Wong, the Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong for his guidance, distribution of the questionnaires and endorsement for the study approval.

### Funding/support

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### Ethics approval

The study was approved by the Survey and Behavioural Research Ethics Committee of the Chinese University of Hong Kong (Ref: SBRE-20-194).

### References

1. Food and Health Bureau, Hong Kong SAR Government. Hong Kong Reference Framework for Hypertension Care for Adults in Primary Care Settings (Patient Version). Revised edition December 2018. Available from: https://www.fhb.gov.hk/pho/files/e_hypertension_care_patient.pdf. Accessed 14 Sep 2021.
2. Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/apha/ash/ASPC/NMA/PCNA 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 Task Force on Clinical Practice Guidelines. Hypertension 2018;71:e13-115.
3. Cohen JB, Townsend RR. The ACC/AHA 2017 hypertension guidelines: both too much and not enough of a good thing? Ann Intern Med 2018;168:287-8.
4. Lim MK, Ha SC, Luk KH, Yip WK, Tsang CS, Wong MC. Update on the Hong Kong Reference Framework for Hypertension Care for Adults in Primary Care Settings—review of evidence on the definition of high blood pressure and goal of therapy. Hong Kong Med J 2019;25:64-7.
5. Khera R, Lu Y, Lu J, et al. Impact of 2017 ACC/AHA guidelines on prevalence of hypertension and eligibility for antihypertensive treatment in United States and China: nationally representative cross sectional study. BMJ 2018;362:k2357.
6. Chobanian AV, Bakris GL, Black HR, et al. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. JAMA 2003;289:2560-72.
7. Cheung BM, Or B, Fei Y, Tsoi MF. A 2020 vision of hypertension. Korean Circ J 2020;50:469-75.
8. Filippone EJ, Foy A, Newman E. Goal-directed antihypertensive therapy: lower may not always be better. Cleve Clin J Med 2011;78:123-33.
9. Feldstein CA. Lowering blood pressure to prevent stroke recurrence: a systematic review of long-term randomized trials. J Am Soc Hypertens 2014;8:503-13.
10. Muntner P, Carey RM, Gidding S, et al. Potential U.S. population impact of the 2017 ACC/AHA high blood pressure guideline. J Am Coll Cardiol 2018;71:109-18.
11. Yano Y, Reis JP, Colangelo LA, et al. Association of blood pressure classification in young adults using the 2017 American College of Cardiology/American Heart Association blood pressure guideline with cardiovascular events later in life. JAMA 2018;320:1774-82.
12. Tsoi MF, Fei Y, Cheung TT, Cheung BM. Characteristics of Americans with stage-1 hypertension: United States National Health Nutrition and Examination Survey 2011-2016. Hong Kong Med J 2018;24 Suppl 1:54.
13. Ong KL, Cheung BM, Man YB, Lau CP, Lam KS. Prevalence, awareness, treatment, and control of hypertension among United States adults 1999-2004. Hypertension 2007;49:69-75.

# Answers to CME Programme
# *Hong Kong Medical Journal* December 2021 issue

Hong Kong Med J 2021;27:399–404

**I. Pictorial Blood Loss Assessment Chart for evaluating heavy menstrual bleeding in Asian women**

| | | | | | |
|---|---|---|---|---|---|
| A | 1. True | 2. True | 3. False | 4. False | 5. True |
| B | 1. False | 2. True | 3. False | 4. False | 5. True |

Hong Kong Med J 2021;27:405–12

**II. Effectiveness of a childbirth massage programme for labour pain relief in nulliparous pregnant women at term: a randomised controlled trial**

| | | | | | |
|---|---|---|---|---|---|
| A | 1. True | 2. True | 3. False | 4. True | 5. False |
| B | 1. True | 2. False | 3. True | 4. True | 5. False |