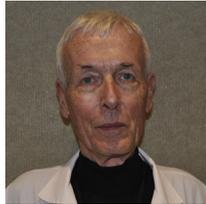


GUEST EDITORS' PAGE



## The Blood Pressure Landscape



### Schism Among Guidelines, Confusion Among Physicians, and Anxiety Among Patients

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**C**ase report: A 63-year-old mildly overweight woman presents to your office. On multiple readings her blood pressure (BP) averages 148/86 mm Hg. She is asymptomatic and on no medication.

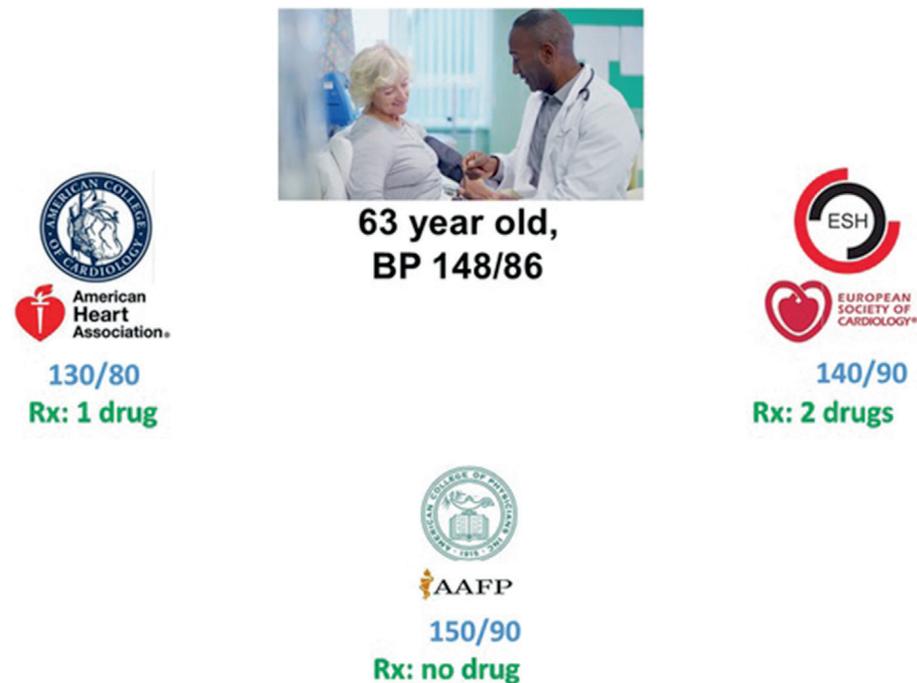
You decide to look up the most recent guidelines as to her optimal on-treatment BP: The 2017 American College of Cardiology (ACC)/American Heart Association (AHA) guidelines—which aide approximately 25,000 cardiologists in the United States—indicate that her BP should be <130/80 mm Hg (1). The 2018 European Society of Hypertension (ESH)/European Society of Cardiology (ESC) guidelines—which aide approximately 75,000 physicians—indicate that her BP should be <140/90 mm Hg (2). The 2017 American College of Physicians (ACP)/American Association of Family Physicians (AAFP) guidelines—which aide approximately 250,000 family practitioners and internists in the United States—indicate that her BP should be <150/90 mm Hg (3) (Figure 1).

You decide to look up the most recent guidelines as to her initial antihypertensive therapy: The 2017 ACC/AHA guidelines recommend to initiate treatment with 1 drug (1). The 2018 ESH/ESC guidelines recommend to initiate treatment with 2 drugs (2). The 2017 ACP/AAFP guidelines recommend not to initiate treatment (i.e., no drug) (Figure 1) (3).

The next question to be addressed is whether it truly matters. To find out, we can project the on-treatment BP targets of the 3 guideline sets on the Lewington et al. (4) meta-analysis, which explored the relationship between usual blood pressure and mortality from stroke, coronary artery disease, and other vascular disease by evaluating individual data of 1 million adults in 61 prospective studies. In doing so, we note that her absolute risk of stroke mortality is around 5% for the suggested on-treatment target BP of the ACC/AHA guidelines, 8% for the target BP of the ESH/ESC guidelines, and 14% for the target BP of the ACP/AAFP guidelines (Figure 2). Hence, the absolute stroke mortality risk is more than 2-fold higher for the on-treatment BP target in the ACP/AAFP guidelines than in the ACC/AHA guidelines. This holds true not only for mortality from cerebrovascular disease, but also, as the Lewington et al. (4) study allows us to estimate, for mortality from coronary artery disease and from other vascular disease as well.

Of note, the schism of these recommendations among the guidelines is based on the same body of evidence; no major randomized trial has been put forward since SPRINT (Systolic Blood Pressure Intervention Trial), and the data in aggregate were identical for all 3 guideline sets (5). A thoroughly confused physician may now ask the appropriate question: how did 3 panels of experts arrive at a definition of hypertension and what are supposedly optimal on-treatment BP levels that differ by as much as 20 mm Hg in systolic BP? The inevitable implication of introducing BP limits for definition and treatment

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**FIGURE 1** Upper Limit of On-Treatment Target BP as per Various Guidelines and Recommended Initial Therapy

The 2017 American College of Cardiology/American Heart Association blood pressure (BP) guidelines recommend to initiate treatment with 1 drug (1). The 2018 European Society of Hypertension (ESH)/European Society of Cardiology BP guidelines recommend to initiate treatment with 2 drugs (2). The 2017 American College of Physicians/American Association of Family Physicians (AAFP) BP guidelines recommend not to initiate treatment (i.e., no drug).

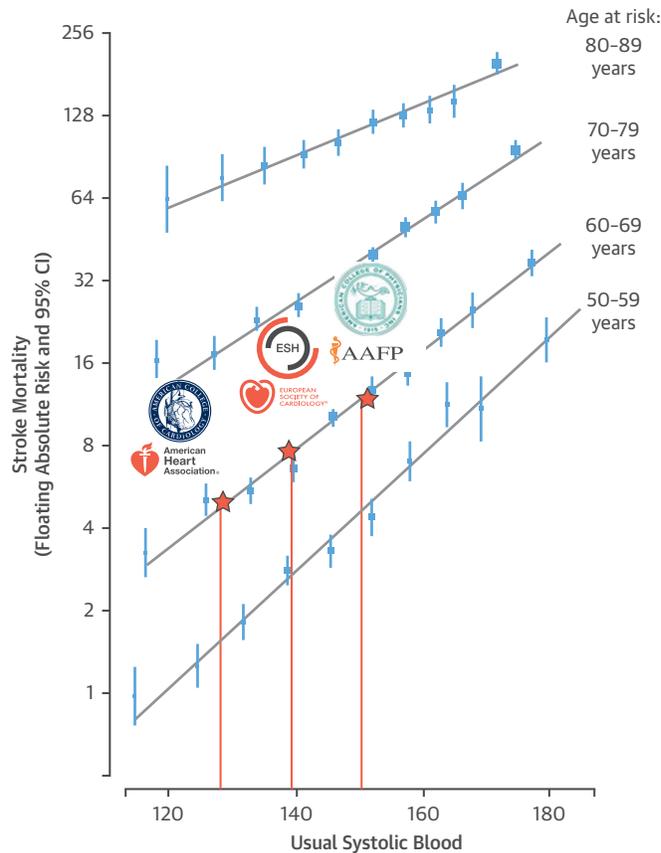
is that, if a patient scores just above or below them, our advice and action should be different and be based on “the assumption that those subjects with hypertension differ qualitatively from the rest of mankind,” as Pickering stated (6).

Perhaps most concerning are the repercussions of this guideline schism for our patients. A recent editorial by the Guideline Committee of the ACP warned in no uncertain terms, “We believe that initiation of pharmacologic therapy at or above a BP of 130/80 mmHg and treatment to targets <130/80 mm Hg in a broad population of older adults are not supported by evidence and may result in low-value care” (7). How the insinuation of providing “low-value care” will unfold in the ever-increasing patient flow from primary physicians to cardiologist and vice versa remains to be determined. There is little doubt, however, that differences in opinion among physicians of what consists of hypertension and whether to treat or not to treat are prone to cause anxiety and dismay among patients. A patient may refuse to increase the daily pill burden for what his/her primary care physician considers as low-value

care; no cardiologist would like to be accused of providing low-value care.

Practicing physicians commonly trust guidelines to be the epitome of evidence-based medicine. However, of a total of 2,711 recommendations in the ACC/AHA clinical practice guidelines in 2009, only a median of 11% were classified as Level of Evidence A, whereas a median of 48% were Level of Evidence C (8). This would indicate that guidelines still are predominantly based on lower levels of evidence or expert opinion. Clearly, guideline recommendations are not only an evaluation and interpretation of evidence in question, but also a judgment weighted by personal, regulatory, and organizational preferences that can vary from physician to physician within a country and across geographical regions. The above hypertension guideline fiasco eloquently illustrates the potential shortcomings of dogmatic clinical directives and, if anything, is prone to increase the rift between those who preach, those who teach, and those who treat (9). However, evaluating and integrating research findings into daily clinical practice remains a lifelong commitment for all physicians and

**FIGURE 2** Stroke Mortality for Upper Limit of On-Treatment Systolic Target BP as per Various Guidelines



Absolute risk of stroke mortality is 5% for the suggested on-treatment target BP of the ACC/AHA guidelines, 8% for target BP of the ESH/ESC guidelines, and 14% for target BP of the ACP/AAFP guidelines. Abbreviations as in Figure 1.

hopefully will, on occasion, give rise to thoughtful dissent. In practical terms, this simply means taking to heart Kant's dictum of: "Enlightenment is man's leaving his self-caused immaturity. Immaturity is the incapacity to use one's intelligence without the guidance of another. Such immaturity is self-caused if it is not caused by lack of intelligence, but by lack of determination and courage to use one's intelligence without being guided by another. Sapere Aude! Have the courage to use your own intelligence! is therefore the motto of the enlightenment" (10).

Unless we make a concerted effort to do so, as the number of guidelines is increasing more rapidly than does iron-clad evidence, we are prone to see more and more schism among recommendations, confusion among physicians, and anxiety among patients.

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