

One-size-fits-all management of hypertension: a key to poor control of hypertension in low income settings in sub-Saharan Africa?

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Commentary

There is evidence that hypertension has reached epidemic proportions with the greatest impact in the developing countries (1,2). It remains under diagnosed, under investigated, and under treated (3). The awareness rate remains very low even in health professionals at the forefront in the fight against chronic non-communicable diseases (NCDs) (4). The armamentarium in treating hypertension is vast and efficient. Basic diagnostic tests needed for the investigations of these NCDs, and the essential medicines recommended for the treatment of these conditions largely remain unavailable and unaffordable in low income settings (5). In hypertensive patients on anti-hypertensive medicines, the control rates remain very low in low income settings (6-9). This has been attributed to external factors such as non-compliance to treatment, concomitant use of other medicines such as non-steroidal anti-inflammatory drugs that can reduce the efficacy of anti-hypertensive medicines (10). Internal factors such as the circadian rhythm or dipping pattern of blood pressure (BP) have been shown to play a role in cardiovascular risk stratification, and the control of hypertension when the principles of chronotherapy are applied (11-14). BP control in the morning has been improved when the morning pill regimen was switched to the evening pill regimen, with a good control of the evening BP especially in elderly patients with co-morbid conditions like chronic kidney disease and diabetes (15-18). There is evidence that the non-dipping pattern is more frequent in patients classified as high risk

with newly diagnosed and untreated essential hypertension in Caucasians (19,20). This suggests that the one-size-fits-all current treatment of hypertension with anti-hypertensive pills could be a key to poor control of hypertension. The drug dosing of one long acting pill in the morning for all as seen in current practice will result in non-dippers and reverse dippers not sufficiently being covered at night, thereby leading to poor control of night time and morning BPs. Such group might be exposed to adverse vascular events such as intracerebral bleeds (21). Extreme dippers on the other hand, will be over treated thereby possibly exposing them to ischemic events such as ischemic stroke, ischemic optic neuropathy, and acute myocardial infarcts (22). For an optimal control of hypertension, each patient should undergo a 24-hour ambulatory BP measurement (ABPM), so that their personal BP profile determined, and their anti-hypertensive drug regimen personalized (16,23,24). The cost-effectiveness of this strategy remains unclear in resource limited settings where there are few skilled health personnel. Patients who do not achieve rapid BP control should undergo ABPM or should be considered for anti-hypertensive drug regimen switching (chronotherapy) from the morning regimen to the evening regimen according to the multitude of evidences from the literature, even when the pill is a diuretic (18,25). However, the latter strategy of switching pill regimen without an ABPM will not help in detecting extreme dippers who might largely benefit from a 12-hour duration (low trough-peak ratio) morning regimen anti-hypertensive than a 24-hour duration (high trough-peak ratio) anti-hypertensive medicine (26).

In conclusion, in view of the available evidences, BP control in essential hypertension in low-income settings could be improved and the risk of adverse events reduced if the principles of chronobiology and chronotherapy are carefully studied and applied according to individual patients' condition. This is the better way of quantifying truly uncontrolled hypertension in low-income settings in sub-Saharan Africa. We suggest that in high risk patients who do not achieve rapid BP control within 3 months, anti-hypertensive drug regimen switching (chronotherapy) from the morning regimen to the evening may improve BP control especially in low-income countries where ABPM monitoring devices are not widely available for the effective evaluation of the patients' chronobiology. Awareness on the concept of chronotherapy will need to be raised as it remains unknown to most primary care physicians in these settings.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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