Time to bury "hypertension"

An absolute cardiovascular risk approach will better target patients who need pharmacotherapy

The publication of the Systolic Blood Pressure Intervention Trial (SPRINT), sponsored by the United States National Institutes of Health, has left physicians claiming that systolic blood pressure targets of < 120 mmHg are too low and unobtainable, and that the results are not generalisable to their "real" patients.[1] Although it was ostensibly a "hypertension optimal treatment" trial, it was also, in effect, a quasi-trial of the treatment for elevated blood pressure in high risk individuals who would otherwise remain untreated. This can be argued because the study population were all high risk patients determined by age, clinical conditions or Framingham risk score, and the entry-level systolic blood pressure was 130 mmHg rather than the normal treatment threshold of 140 mmHg. The low entry level, with a mean systolic blood pressure of 139.7 mmHg, probably explains the low targets achieved in the intensive treatment group. The study demonstrated not only that the reduction of systolic blood pressure leads to benefits in decreasing the rates of all-cause mortality and cardiovascular morbidity and mortality, but also that this reduction could be achieved with relative safety, even for older patients, as there was no overall difference in serious adverse event rates between the intensive treatment group and the standard treatment group. This conclusion had also been arrived at in the Hypertension in the Very Elderly Trial, a randomised controlled study of blood pressure lowering in very old patients, where serious adverse events were actually lower in the treatment group compared with the placebo group.[2] The accepted wisdom of "it only takes one broken hip to wipe out all that gain in cardiovascular risk" does not seem to hold true.[3]

The predictable criticism of the findings reflects the entrenched clinical concept of hypertension — that there is a magic figure above which you have the condition and below which you do not. SPRINT reinforces that lowering blood pressure to at least 120 mmHg may be beneficial for a high risk individual as no J-curve nadir was demonstrated. It is opportune to return elevated blood pressure to its continuous variable risk factor status rather than treat it as a dichotomous disease. After all, the very term "hypertension" is confusing to patients.[4]

Who should we treat with blood pressure-lowering drugs?

Initiation of pharmacotherapy should be reserved for those who will probably benefit in terms of preventing a major adverse cardiovascular event, and when this benefit clearly outweighs the potential harms of side effects and costs of treatment. Candidates are therefore those at moderate to high risk of such events in what is an asymptomatic condition. A simple algorithm populated by the most important determinants of cardiovascular disease risk is sufficient to identify the individuals who do not have a manifest disease. This is readily accessible with the Australian absolute cardiovascular risk calculator.[5] Such an approach recognises that drug therapy should be considered in the context of the whole person, while acknowledging that action on risk stratification can be challenging and complex for many.

Implementing the absolute cardiovascular risk factor approach in Australian health care

Australian clinical practice has not yet widely adopted the absolute cardiovascular risk factor approach,[6] despite the development of evidence-based guidelines by the National Vascular Diseases Prevention Alliance (NVDPA). These guidelines are the result of a collaboration of four peak bodies — Kidney Health Australia, the National Heart Foundation, the National Stroke Foundation and Diabetes Australia — and have the endorsement of the National Health and Medical Research Council (NHMRC).[7,8] The NHMRC has also recently adopted the absolute cardiovascular risk approach as one of its priority cases for research translation.[9]

With such an approach, the recommended pharmacotherapy regimen will need to be changed for high risk "normotensive" patients and for low risk "hypertensive" patients. The first group comprises individuals who are at a high risk due to a clinical manifestation of cardiovascular disease or clustering of risk factors, but whose blood pressure has not crossed the 140/90 mmHg threshold. The National Prescribing Service, as part of its MedicineWise program, and the NVDPA have addressed this group through educational programs which use case vignettes of the unexpected fatal myocardial infarction of a late middle-aged male smoker who did not have hypertension or hypercholesterolaemia (http://www.nps.org.au/media-centre/media-releases/repository/latest-program-from-nps-medicinewise-targets-blood-pressure). SPRINT reinforces the benefits of treatment in this group.

The second group comprises those (often younger) patients with mildly elevated blood pressure, who are

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low risk but hypertensive and for whom drug treatment is not recommended. For this group, there is a concern that such individuals may be harmed due to a delay or absence of treatment, allowing irreversible pathological damage to occur, that is, to accrue adverse legacy effects. While research in this area is ongoing and has yet to demonstrate such effects, it does contrast with another clinical concern, that of overdiagnosis.[10,11] Diagnosing an individual with a medical condition has adverse effects for those who have an asymptomatic condition where intermediate benefit is very unlikely; this also has opportunity costs to society because of the misdirection of limited resources. Such individuals do not remain untreated, just unmedicated, as attention is paid to adverse health behaviours, which, when addressed, have benefits beyond the cardiovascular system. In practice, such individuals are likely to delay rather than avoid drug therapy, as age is the most important determinant of risk; however, their years on therapy will be truncated without affecting their lifespan and quality of life. Evidence suggests that reassessment of risk is not required for most low to moderate risk individuals within 8–10 years of the diagnosis, with the exception of those close to treatment thresholds, for whom annual review is recommended.[12]

Given the limited uptake of the absolute risk approach to date, how can we encourage its increased use? One possible way is through the Pharmaceutical Benefits Scheme (PBS). The current PBS indication for blood pressure-lowering agents is hypertension, rather than a specified blood pressure threshold. Hence, prescribing would seem to be unimpeded by the absolute risk approach, given that such a definition is likely to be deferred to expert guidelines. Cholesterol-lowering agents, on the other hand, have a complex set of criteria for eligible prescribing on the scheme that are not solely based on a single serum cholesterol threshold (http://www.pbs.gov.au/info/healthpro/explanatory-notes/gs-lipid-lowering-drugs). To advance cardiovascular health care in Australia, the NHMRC Primary Health Care Steering Group recognised that uptake of the absolute risk approach could be enhanced by changing PBS criteria for statins from these criteria to one based more simply on an absolute risk threshold.[9] To this end, the NHMRC is asking the Pharmaceutical Benefits Advisory Committee to consider aligning their prescribing conditions to the NHMRC-approved absolute cardiovascular disease risk guidelines.[8] This would mean that all physicians would need to become familiar with the Australian cardiovascular risk calculator in order to access statins for their primary prevention patients. Once habituated, they may be more willing and able to apply it in the setting of treating elevated blood pressure.

With benefit demonstrated at lower thresholds and to lower targets, there is a greater imperative to move away from the hypertensive model of care as these thresholds and targets approach the ideal blood pressure of 115 mmHg,[13] which would capture most of the population. Taking the absolute risk route will, on the other hand, target those who have a covert cardiovascular disease most likely to manifest clinically in the foreseeable future and, therefore, benefit from pharmacotherapy.

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