Lower blood pressure targets: to whom do they apply?

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For many decades, the optimum blood pressure treatment target to prevent cardiovascular disease has been debated. Until 2013, most guidelines suggested that the general population with hypertension should be treated to achieve a blood pressure goal of lower than 140/90 mm Hg, but that the goal for some high-risk groups, such as patients with diabetes and chronic kidney disease, should be a blood pressure of lower than 130/80 mm Hg. In 2013, most guidelines relaxed the recommendations for high-risk patients, based on a lack of evidence, which was brought to attention after the disappointing results of the Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial.[1–3]

In *The Lancet*, Xinfang Xie and colleagues[4] present the results of a systematic review and meta-analysis of randomised controlled trials comparing intensive versus less intensive blood pressure-lowering treatment strategies. They used evidence from 19 trials with 44 989 participants and 2496 major cardiovascular events to show that intensive blood pressure lowering is associated with reduced risk of the composite endpoint major cardiovascular events (relative risk reduction 14% [95% CI 4–22]), as well as stroke (22% [10–32]) and myocardial infarction (13% [0–24]). The mean blood pressure achieved in the intensive treatment group was 133/76 mm Hg, compared with 140/81 mm Hg in the less intensive treatment group. Xie and colleagues conclude that "there are additional benefits from more intensive blood pressure lowering, including for those with systolic blood pressure below 140 mm Hg". However, three issues need to be discussed further.

First, the most crucial decision in the design of a systematic review is which studies to include. In Xie and colleagues' systematic review,[4] the authors included trials comparing different blood pressure targets. It is the most comprehensive compilation of such trials so far, but the results of the review still do not represent all the available evidence for blood pressure lowering. Other trials, in which antihypertensive drugs are compared with placebo, have also been done in patients with blood pressure lower than 140/90 mm Hg.[5]

Second, this meta-analysis[4] included trials with a wide variety of patient populations, including patients with hypertension alone, those with diabetes, those with chronic kidney disease, children, and elderly patients. Two trials done in elderly patients were included, both with a treatment goal blood pressure of lower than 140/90 mm Hg in the intensive treatment group. Should we change treatment targets in elderly patients, solely because these two studies were included in the meta-analysis? Five of the included trials were confined to patients with diabetes mellitus. The changes of blood pressure targets for patients with diabetes mellitus in guidelines were done with knowledge of these trials, and additional placebo-controlled trials.[6] Should we lower blood pressure goals in patients with diabetes mellitus, merely because of the inclusion of those four trials in this meta-analysis? In particular, does the large UK Prospective Diabetes Study trial[7] in patients with diabetes, and a treatment goal blood pressure of lower than 150/90 mm Hg in the intensive treatment group, give any information supporting lower treatment goals?

Finally, the included trials comprised a wide range of achieved blood pressures. In the intensive treatment group, with a mean blood pressure of 133/76 mm Hg, the blood pressure achieved in these trials ranged from 118/75 to 144/82 mm Hg. In the less intensive treatment group, with a mean blood pressure of 140/81 mm Hg, it ranged from 124/80 to 154/87 mm Hg. The inclusion of trials irrespective of blood pressure achieved guarantees comprehensiveness and increases power, but also makes it difficult to judge the applicability of the results over the blood pressure range.

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In summary, Xie and colleagues' systematic review[4] provides strong evidence that intensive blood pressure reduction is more beneficial than less intensive blood pressure reduction. This finding will pave the way for the treatment of a large number of additional patients compared with the number treated at present. About a third of all excess cardiovascular mortality attributable to increased blood pressure is within the normotensive range.[8] Hence, with the numbers needed to treat presented by Xie and colleagues (94 for high-risk patients and 186 for all other included patients), this finding will be of great interest from the point of view of public health, and probably beneficial from a health economic perspective. The results of this review will probably be supported further by forthcoming results from the Systolic Blood Pressure Intervention Trial (SPRINT).[9] SPRINT had a similar design to the trials included in Xie and colleagues' meta-analysis,[4] with the addition of around 9000 more patients, with moderately raised blood pressure (systolic blood pressure >130 mm Hg) and increased cardiovascular risk, to the 44 989 analysed here. Although the evidence seems to be convincing, including studies from different populations in a meta-analysis does not mean that the overall results can be applied to all included populations. In particular, it is not yet obvious that patients with diabetes mellitus, or very elderly patients, will benefit from lower treatment targets than the recommended goal of lower than 140/90 mm Hg. Thus, the definition of new blood pressure treatment targets will not be an easy task, in terms of comorbidity and a specific mm Hg target.

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We declare no competing interests.

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Late preterm rupture of membranes: it pays to wait

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In contrast to previous assumptions, there is increasing evidence that being born in the late preterm period—between 34 and 36 weeks gestation—is associated with important long-term adverse effects. Several adverse outcomes have been reported, including cerebral palsy, more hospital admissions in early childhood, lower childhood height, asthma, limiting long-term illness, and poorer educational attainment.[1–3] Findings from studies show a gradient of health outcomes with decreasing gestation.[1] An estimated 4–5% of infants are born at 34–36 weeks,[2,3] and 30% of preterm births follow pre-labour rupture of the membranes.[4] Because of the potential risks of fetal and neonatal infection—although with limited evidence to support this assumption—present guidance favours planned early delivery in women presenting with ruptured membranes at 34–36 weeks.[5,6] With the emerging evidence of differences in long-term outcomes between late preterm and term infants, robust assessment of the risks and benefits of this strategy is essential, because a small increase in gestation at birth is likely to be beneficial to the infant.

In *The Lancet,* Jonathan Morris and colleagues[7] present the results of a pragmatic randomised controlled trial of planned immediate delivery versus expectant management in women presenting with pre-labour ruptured membranes at 34–36 weeks. Findings from this trial advance substantially the evidence on the optimum management strategy in these women. 1839 women in whom there was no indication for urgent delivery were randomly assigned to immediate delivery (n=924) or