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Blood pressure targets for hemodialysis patients

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In the general population, there is good evidence for treating patients with hypertension, with benefit down to a systolic blood pressure (SBP) of 140 mmHg. Although there is benefit for reducing the risk for stroke with even lower SBPs, there is an increased risk of heart disease with lower SBP targets. However, for haemodialysis patients, observational data demonstrates a "U" shaped curve for pre-dialysis SBP and DBP, with survival benefit for patients with pre-dialysis SBPs of 160 mmHg and greater. Although confounding with lower SBPs may be due to increasing numbers of patients with underlying cardiac disease who are unable to generate a higher SBP when volume overloaded prior to a dialysis session, and so explain the increased mortality risk for this group, whereas patients with normal cardiac function may respond to pre-dialysis volume expansion by generating a high pre-dialysis SBP, so supporting survival for this group with high SBPs. However, the haemodialysis (HD) patient differs from the hypertensive patient in the general population, as they are also at risk of intra-dialytic hypotension, and these sudden fluctuations in blood pressure may be responsible for the brain white matter changes and decline in cognitive function reported in longer term HD patients. This then questions the importance of controlling pre-dialysis SBP, if controlling pre-HD SBP increases the risk of intra-dialytic hypotension. Studies using ambulatory blood pressure monitoring have suggested that blood pressure stabilises post-HD, and then remains relatively constant, but then starts to rise in the 6-8 hours prior to the next HD session, and as such the pre-HD blood pressure does not necessarily reflect the inter-dialytic blood pressure control. This is supported by studies measuring blood pressure at different times around the dialysis session. As such, this then highlights the difficulty in determining blood pressure control from pre- and post-dialysis blood pressure measurements, and the need for alternative methods such as home blood pressure recordings. It is equally important to establish whether high blood pressure is related to volume overload or vasoconstriction, as the management differs. When faced with patients with pre-dialysis SBPs > 160 mmHg, the clinician needs to establish whether this is transient and not reflecting inter-dialytic hypertension, and then whether this is due to volume overload or vasoconstriction.