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**Abstract**

BACKGROUND AND AIM: Serum creatinine is commonly used to assess and monitor renal function in the management of abdominal aortic aneurysm with endoluminal grafting, and for intervention of renal artery occlusive disease. The majority of patients selected for these procedures are elderly and serum creatinine is used post-operatively to monitor renal function. There is a need to adjust the serum creatinine concentration for age to determine the changes that might be due to the procedure: especially with endoluminal grafting using transrenal manipulation and fixation, and procedures involving interventions directly on the renal arteries. A single reference interval for serum creatinine is usually given for each sex but does not take into account variation due to age. The objective of this study was to establish age related reference intervals for serum creatinine, especially for those over 60 years of age to assist in the clinical interpretation of creatinine levels in the years following endoluminal grafting for aneurysms of the abdominal aorta.

METHODS: A pathology services database was established for serum creatinine measurements from 98,688 patients (44,784 males and 53,904 females). Data was stratified into five year age groups and reference intervals assigned for each age group after a reference population was determined. The heterogeneous population was refined firstly by removing patients with extreme (> or =200 micromol/l) concentrations of serum creatinine, outliers and repeated values. Secondly, a putative "healthy" population was determined by removing values outside three standard deviations of the mean. Two statistical methods, the Bhattacharya and Hoffmann methods, were then applied to obtain a putative reference population. Serum creatinine data was obtained from the Busselton Population Research Foundation for comparison.

FINDINGS: Serum creatinine concentration increased steadily with age; in females from the age of 40 years and 60 years for males. Reference intervals for males and females aged from 20 to 94 years were established. Advancing age affects serum creatinine levels, especially in the "vascular" age group of 60 to 80 years. The changes in serum creatinine concentration that occur with age is relevant in interpretation of the results of renal monitoring after intervention.