A method to produce exact simultaneous confidence bands for the empirical cdf that was first described in Owen (1995), and later modified by Jager and Wellner, is the starting point for deriving simultaneous confidence bands for the survivor function, $F(\cdot)$, of any positive random variable. We invert a nonparametric likelihood test of uniformity to obtain simultaneous lower and upper bands for $F(\cdot)$ with global confidence level $1 - \alpha$. Noé's recursion provides the computational engine. Various aspects of these exact bands are investigated, using as an illustration survival times for non-Hodgkin's lymphoma patients with Stage 4, advanced disease.