Reduced-form models of name-by-name default timing are widely used to measure portfolio credit risk and to analyze securities exposed to a portfolio of names. Monte Carlo (MC) simulation is a common computational tool in such settings. We introduce a new change of measure perspective for MC simulation for default timing problems. The perspective provides the means of analyzing current methods and suggests a new MC algorithm which outperforms a widely used and standard technique. (Received September 22, 2015)