In this work (joint with M. Ehrhardt, C.B. Schönlieb (Cambridge) and P. Richtarik (Kaust)) I will describe the basic techniques to show convergence and accelerated convergence of primal-dual type algorithms. I will then introduce a stochastic variant of a primal-dual algorithm and show that it has essentially the same structure as its deterministic counterpart and can be accelerated in the same way, yielding, in fact, better convergence rates.