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Melody Walker* (melody@vt.edu), Department of Mathematics, 460 McBryde Hall, Virginia Tech 225 Stanger S, Blacksburg, VA 24061, and **Lauren M Childs**. *The Role of Testing in COVID-19 Outbreak Control*. Preliminary report.

The on-going pandemic of novel coronavirus disease (COVID-19) caused by infection with SARS-CoV-2 has caused a significant burden on individuals and society. As COVID-19 is known to be transmitted by non-symptomatic individuals, travel restrictions and social distancing measures have been placed on society as a whole in order to decrease transmission. An alternative to these restrictive measures, testing along with contact tracing could be used to slow the spread of COVID-19. While some countries, such as South Korea and Iceland, have successfully utilized random or broadly applied testing strategies, testing remains limited in scope in the US. Individual localities may have restrictions on the number of tests due to access to supplies, lab equipment and personnel. Here, using ordinary differential equations we model how different testing strategies impact disease spread. We build in limits to testing capacity and delays to receiving results. Once tested, we assume that individuals respond to knowledge of their disease status through changes in behavior. We examine strategies for optimally implementing testing to decrease spread of COVID-19, and, thus, minimize socially and economically restrictive mitigation measures. Keywords: COVID-19, testing, ODE model, disease dynamics (Received September 09, 2020)