

# Cognitive Capacity, Fatigue and Decision Making: Evidence from the Practice of Medicine

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## Abstract

The process of diagnosis in medicine depends on high dimensional, complex belief formation, repeated experimentation and data aggregation from multiple sources (e.g. labs, images, discussions with patients). In this paper we explore the role of point-in-time cognitive capacity in this process. We develop a simple model in which a physician develops priors using cognitive effort followed by an experimental phase in which diagnostic orders are used to assess those priors. This yields simple comparative statics demonstrating the relationship between diagnostic and treatment decisions for a particular patient and the mental bandwidth – cognitive capacity – required for patients other than her. We estimate the model empirically using novel administrative data on the universe of orders, consults and other clinical actions captured in the Electronic Medical Record (EMR) of a large Emergency Department. We exploit the random assignment of patients to physicians to estimate the impact of leave-out patient cognitive requirements on the precision and effort needed for diagnosis, treatment and triage. We find that *within doctor*, over the course of a shift the complexity of other patients being treated has empirically meaningful and statistically significant impacts on diagnostic orders, clinical consults, documentation time and effort and admissions to the hospital from the ED. We construct an empirical measure of Shannon entropy of beliefs using diagnostic orders made and demonstrate that reductions in cognitive capacity result in more diffuse priors. Finally, we explore a counterfactual allocation in which scheduling takes into account cognitive load and study the impact on resource utilization.