Identification of Preliminary Context-Based Policies for Short-Term Inpatient Care Work Planning

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The short-term inpatient care work planning problem consists of assigning daily tasks to hourly rounds. This problem is solved by healthcare workers at the start and throughout their workday. Due to the fast pace of healthcare work systems and the cognitive limitations of humans, work planning strategies are often static, and thus may prove inadequate on particular workdays. Inadequate work plans may not only compromise healthcare quality but also cause burnout among healthcare providers. The objective of this study is to develop high-quality and practical work planning policies that can be applied by healthcare workers using limited computational resources. The problem was formulated as a variation of the 0-1 generalized assignment problem with nonlinear capacity constraints. Metrics for timeliness and physical dispersion were used as objective criteria. Optimal solutions, obtained using state-of-the-art complex solution algorithms, were analyzed to gain insights into the characteristics of high-quality, but practical work planning strategies.