

Home health care (HHC) may be defined as care workers visiting patients following predefined schedules in order to provide medical services in their homes. Maintaining a sustainable and effective health care system is a major challenge, so HHC providers must discover new ways to decrease costs and enhance productivity by optimizing the use of resources.

First, the findings of a literature review on OR models applied in HHC will be discussed. It was found that a key opportunity for improvement is the optimization of medium-term (4-week) decision-making by integrating different decisions (e.g., rostering, assignment, scheduling, routing) while considering numerous realistic problem aspects (e.g., continuity of care and working time regulations). Second, the specific problem setting we focus on is defined, and a matheuristic solution algorithm for the problem is proposed. This integrated algorithm first finds a feasible initial solution using a tailored k-means heuristic and a binary integer linear programming model. In the second phase of the solution algorithm, the initial solution is improved by a tailored large neighbourhood search heuristic while periodically solving a mathematical model. Finally, the efficiency gains of tackling the medium-term HHC planning problem in an integrated manner instead of sequentially will be demonstrated, after which the results of some experiments conducted to derive insights for the practical organization of HHC will be discussed.