

Key performance indicators and their optimal performance

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Key Performance Indicators (KPIs) have been a popular tool for sorting out the question of urgency in health care systems, by setting the standards for time to initiation of treatment for these various populations. KPI standards typically comprise a time limit for treatment to begin and a compliance probability stating the minimum acceptable fraction of the patient class that adheres to it.

KPI standards represent a system of constraints, and lack a goal to be optimized. This tutorial starts commences with a review of several diverse areas in healthcare where KPI standards arise. We next present an appropriate set of objective functions for optimal performance of a KPI system, which relate to minimizing the amount of excess waiting that occurs. We then show that the Accumulating Priority Queueing (APQ) discipline is well-suited to facilitate compliance of diverse patient populations served by a common facility. The remainder of the presentation addresses what we have learned about the various objectives, their relationship to each other, and their optimal performance. We are particularly interested in the performance of a simple Rule of Thumb which assigns priority to customers in each KPI class in inverse proportion to that class's waiting time limit.