



Service Priorities and Programmes Electronic Presentations

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Service Planning by Computer Simulation

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Introduction

Traditionally, the quota set in the SOPD is based solely on the supply of service providers, such as doctors and phlebotomists (blood-takers), and their speed of service. Situations such as early or late arrivals of patients, and variance in service time are not considered, at least not at the very beginning. This usually results long queues of patients waiting for long time. Adjustments may be made to relieve the congestion afterwards by try-and-error, i.e. decrease the quota if the queue is too long and vice versa. However this process takes several months to take effect and many rounds of fixing are expected. It is costly in terms of money, time, staff and patient stratification. We need a scientific way to plan the service better before launching. The re-engineering of the blood-taking service in UCH used computer simulations to help service planning.

Objectives

Use computer system to trial various scenarios before launching the service. The queue length and waiting time at different time of the day can be predicted instantly. Adjustment of quota and resources can be tuned in the planning phase.

Methodology

There are two steps: data collection and computer simulation. [Data Collection]: Distribution of patients' arrival time is captured from the historical data from OPAS. Statistically, it is a normal distribution with average 9.94 minutes before their appointment time, with a standard deviation of 62.2 minutes. Distribution of service time is obtained by time logging. The service mean time is 5.5 minutes, with a standard deviation of 1.1 minutes. [Simulations]: In the simulation phase, we tried for different combinations of the service parameters: - timeslots - number of blood takers in different timeslots. Example, 10 at clinic open, 12 at peak hours, 2 at lunch hours - quota for each of the timeslot Based on the above data, a computer system can simulate - the individual arrival time of each patient - the start and finish service time, for each case, by each blood-taker

Result

With computer simulations, service outcome can be predicted effectively with low cost in a short time. Different combinations of service parameters can be tested and examined before launching.