

Improving Behavioral Healthcare in Army Medical Treatment Facilities

Vertical

Manufacturing	Pharmaceutical	Healthcare	Portfolio	Logistics	Financial	Government	Business
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Genre

Case Study	Project Review	White Paper	Value Proposition
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Client

US Army Medical Treatment Facility



Situation

With an increase in behavioral health injuries and stress-related disorders due to direct interaction with war-related experience, a medical facility for the US Army wished to improve the treatment and health of soldiers and have them return to full duty more efficiently and effectively. However, wait time for walk-in patients often exceeded 120 minutes resulting in patients leaving the facility without being seen. In addition, patients with appointments were seen once every three months, on average. Complicated patients were treated in house due to the potential for a Medical Evaluation Board (MEB), while uncomplicated patients were directed to the network so that they may be returned to full duty sooner. Before an MEB decision can be made, patients require 5-7 therapeutic sessions over a period of 8-10 weeks. The existing MEB timeline averaged about 18 weeks. Space constraints also limited the number of providers able to see patients. The facility needed to find a method to improve its system in a low-risk manner.

Objective

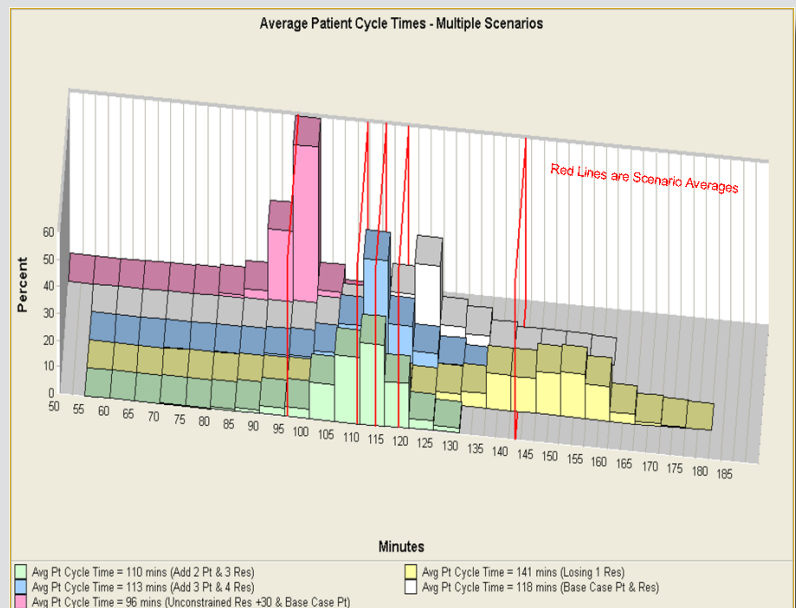
- Ensure no patient leaves without being seen (early departures)
- Shorten time between appointments for individual patients
- Reduce patient waiting time
- Arrive at an MEB decision earlier than 18 weeks

Results

Simulation based methodology proved to be an accurate, low risk tool for analyzing the current state of a Behavioral Health Facility. Sensitivity in the system was identified quickly and the impact of potential changes was easily predicted.

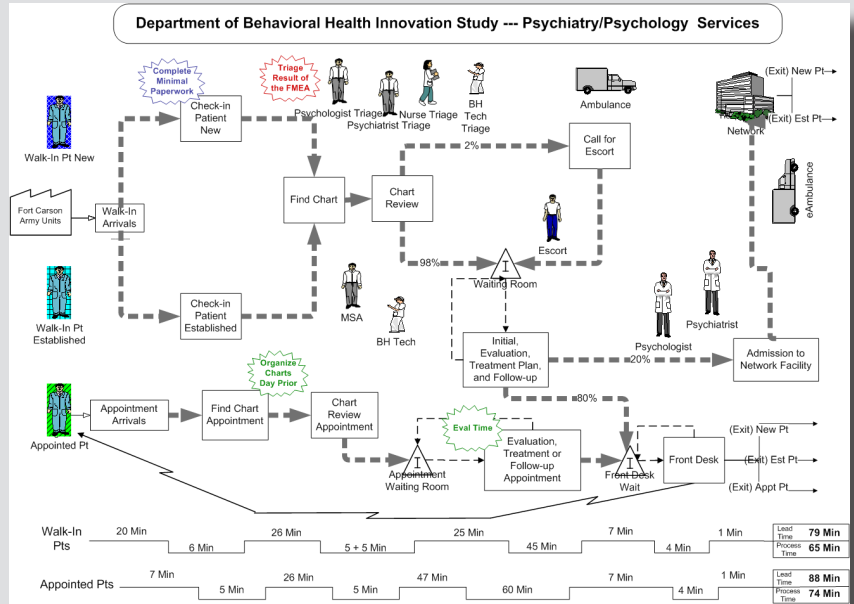
With such clear results, the facility established a triage team (three more resources) from current staffing. This team enabled the treatment of two more patients per hour without hindering current work flow. In addition, patient waiting time has been reduced to less than 30 minutes and there are no patients leaving without being seen.

Further objectives were met by creating the triage team, including reducing patient cycle time by an average of eight minutes per hour, thereby saving 64 minutes per day. Time between appointments was also reduced and patients may now be seen every two and a half weeks rather than every three, thus achieving a 14 week MEB decision point, considerably less than the 18 week previous timeline. This scenario also proved to be the best cost alternative option given space constraints within the facility. Finally, implementing this change revealed better controlled provider utilization times, allowing for the future study, potential reconfiguration, and optimization of the embedded treatment processes in Behavioral Health.



Solution

Live value stream maps, like the one shown to the right, using ProModel's Process Simulator modeled the current treatment process at the medical facility. The team ran several Virtual Kaizens using the simulation capability to identify issues and test opportunities within the facility's process. A study of the patient treatment process revealed key metrics about walk-in patients as well as appointment patients and was presented to leadership as a visualization of the process. With the model and metrics in place, the process to improve the facility included testing 10 scenarios concurrently involving increased resources as well as increased demand.



Scenario	Average Simulation Cycle Times (20 weeks with 10 scenarios for 200 runs)	Lead Time Process Time
1	Base Case (9 Pts/Hr & 9 Resources) --- white bars	118 Minutes
2	Unchanged Patients & Subtracting 1 Resource --- yellow bars	141 Minutes
3	Adding 1 Patient & 1 Resource	119 Minutes (Not Shown in Chart)
4	Adding 1 Patient & 2 Resource	111 Minutes (Not Shown in Chart)
5	Adding 1 Patient & 3 Resources	103 Minutes (Not Cost Effective, Not Shown)
6	Adding 2 Patients & 2 Resources	120 Minutes (Not Shown in Chart)
7	Adding 2 Patients & 3 Resources --- green bars	110 Minutes
8	Adding 3 Patients & 3 Resources	120 Minutes (Not Shown in Chart)
9	Adding 3 Patients & 4 Resources --- blue bars	113 Minutes
10	Unconstrained Res (30) & Base Case Demand --- pink bars	96 Minutes

The base case scenario demonstrated that provider utilization rates of 88% and 86% (see **Major Data Inputs** table) allowed for no reconfiguration of imbedded processes. Ten scenarios were created and simultaneously run to identify optimum capacity (see **Average Simulation Cycle Times** table). The unconstrained and two or few resource scenarios were included to encompass a range of perspectives. Any scenario taking longer than 118 minutes was not considered. Five selected scenarios (see **Average Patient Cycle Times – Multiple Scenarios** graph on first page) were compared, with Scenario 7 (green bars) being the optimum considering both cycle time and cost.

Major Data Inputs	
# Psychiatrists (Base Case)	4 Providers (not included in Triage Team)
Psychiatrists Utilization Rates (88%)	63% Direct Pt Care, 25 % Required Tasks, 12% Available
# Psychologists (Base Case)	5 Providers (not included in Triage Team)
Psychologists Utilization Rates (86%)	62% Direct Pt Care, 24 % Required Tasks, 14% Available
# Walk In Patients per Day	Poisson Distribution w/Avg of 22 (New & Established)
# Appointments per Hour	9 Soldiers (Base Case Demand) Normally Distributed
Duration of Appointments (in minutes)	Triangular Distribution (30, 60, 75)
Time Between Appointments	3 Weeks Normally Distributed
Triage Team Members	1 Psychiatrist, 1 Psychologist, 1 Nurse Practitioner, & 1 Behavioral Health Specialist