Emergency Department Simulation

‘Hospital A’ is a 500+ bed, not-for-profit hospital located in the heart of a large metropolitan city. It is the only Level I Trauma Center in the state. The hospital is part of one of the largest healthcare systems in the West with 40+ hospitals in Arizona, California and Nevada.

Challenge:
The hospital wanted to redesign their current work processes to maximize the capacity of their new Emergency Department (ED). They also wanted to explore the feasibility of Radio Frequency Identification (RFID) technology for patient tracking and process measurement.

Approach:
FDI worked with hospital personnel to develop a realistic simulation model of their Emergency Department which would quantify the value proposition for various operational alternatives. Also, FDI created the industry’s first RFID infrastructure specifically used for simulation data collection.

Results:
• FDI identified over $10M of potential cost savings and revenue enhancements.
• The simulation model showed where patient bottlenecks occur and how to eliminate them.
• The model determined which operational alternatives provide the greatest impact and which would provide little to no impact.
• FDI analyzed requirements to support future growth anticipated with the hospital’s strategic plan.
• This operational capacity analysis included 3 to 5 year volume projections and ED and Inpatient capacity.

Emergency Department Implementation Services Phase 1

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Challenge:
Senior management requested FDI implement the best practices obtained through the simulation/modeling tool that identified the value proposition of different ED operating scenarios and best practices. The challenges were to: 1) Implement model results, 2) Achieve acceptable performance for operational metrics, 3) Create an ED measurement system for operational performance that identifies key processes, and 4) Produce significant financial impact.

Approach:
FDI working with the ED Steering Committee commissioned several Process Improvement Teams (PIT Crews) for the Analysis, Design and Implementation phase of the project that included the ED, stat lab performance and operational statistics to measure performance. FDI developed meeting agendas and managed the meetings in conjunction with the PIT Crew Chairs in order to develop detailed draft “As-Is” process flows of the current operations and the optimal “To-Be” process designs for operational efficiency. FDI provided industry best practices while creating draft implementation plans and played a vital role with the EDSC in removing roadblocks.

Results:
• Streamlined processes creating more effective results with existing staff
• Significant financial impact to the organization’s bottom line through increased ED and hospital inpatient volume, decreased lost opportunity costs, and improved operational efficiency
• Standardized operational processes and procedures for many aspects of ED
• Improved hospital staff satisfaction with their work environment, leading to improved retention.
Emergency Department Dashboard Reporting Tool

**Challenge:**
The hospital’s senior management requested the development of data reporting tool that would capture specific operational and performance statistics for their Emergency Department.

**Approach:**
FDI collaborated with key client personnel to develop a detailed design of the tool, which included data sources, graphical user interfaces, report content and layout, and roles and responsibilities of the end users. The FDI team then developed the database tool using Microsoft Access with complete end user documentation.

**Results:**
- Hospital management now have a customized dashboard tool that graphically reports key performance indicators on a daily, weekly or monthly basis.
- This enables them to more proactively manage ED performance based on Emergency Department goals.
- FDI provided end user training as well as developed a user guide with training aides.
- A robust troubleshooting capability was built into the tool which supports the tool’s ongoing maintenance and enhancement strategy.

Clinic Operations Model, Greenfield

‘Company B’ is a therapeutic medical device company. The company plans to open therapeutic clinics world-wide with its proprietary and patented therapeutic technology.

**Challenge:**
The company needed to design their work processes and determine the capacity requirements to meet their sales targets.

**Approach:**
Develop a realistic simulation model of their clinic model with the capability of analyzing operational alternatives and best practices and determine their associated value proposition. The project team worked with the leadership team to apply the model to targeted processes in the new clinics to identify resource bottlenecks.

**Results:**
- Finalized new process design and capacity requirements.
- Handed off the model before experimentation to the client.
Clinic Operations Simulation, Space Plan

'Neurological Institute C' is an internationally renown medical center that offers care for people with brain and spine diseases, disorders and injuries. The Institute performs over 4500 neurosurgeries and admits over 9500 patients each year.

Challenge:
The clinic faced issues with insufficient clinic space and inefficient staff utilization. Senior management wanted to explore various operational alternatives to determine if best practices will work. These alternatives varied the configuration of physician offices and exam rooms, sharing vs. dedicated staff between clinic services, clinic schedules and projected increases in procedure volumes over the next 3-5 years.

Approach:
FDI facilitated a process modeling workshop to map their current processes for each clinic service. The team then collected process data through IT system queries, clinic observations and staff interviews. FDI built, validated and experimented with the simulation model exploring the feasibility of each operational alternative.

Results:
• FDI identified over $2.5M in additional revenues through streamlining processes, staffing and improved utilization of clinic space.
• The simulation model proved that all clinic exam rooms and staff could be shared and located in a single location. It also showed that the new clinic could accommodate up to 30% additional patients for existing services resulting in $1.5M in new services.
• FDI facilitated a workshop which finalized the clinic’s space plan.

Emergency Department, Best Practice Evaluation, Sizing

'Hospital D' is a not-for-profit 233-bed regional referral medical center with 12,000 inpatient admissions and over 50,000 emergency room visits last year.

Challenge:
The hospital needed to evaluate the value proposition of alternative operational plans for the ED, identify associated capacity issues and gain consensus around the operational plan and new facility processes.

Approach:
Worked with client personnel to develop a detailed process model of ED processes. Developed a simulation model to identify resource bottlenecks. Evaluated scenarios and best practices based on rising volumes to determine resources needed to remove bottlenecks. Maintained model for the hospital.

Results:
• FDI Simulation redefined critical staffing levels to support order volume growth
• Gained consensus around staffing levels The new facility was sized well.
• It was however, unknowingly planned to open at full capacity which was improved through selective best practice implementation.
• The recommended best practices improved ED Length Of Stay 30%
Outpatient Clinic, Best Practice Evaluation, Sizing, Impact of Future Volume, Staffing

‘Hospital E’ is a not-for-profit 233-bed regional referral medical center with 12,000 inpatient admissions and over 45,000 Clinic visits last year.

Challenge:
The hospital needed to evaluate the value proposition of alternative operational plans and best practices for the Outpatient Clinic and identify associated capacity issues

Approach:
Worked with client personnel to develop a detailed process model of associated processes. Developed a simulation model to identify resource bottlenecks. Evaluated scenarios and best practices based on rising volumes to determine resources needed to remove bottlenecks. Maintained model for the hospital

Results:
- FDI Simulation redefined critical staffing levels to support order volume growth
- Gained consensus around staffing levels Reduced size and associated equipment needs of the Outpatient Clinic 50%
- Identified Operational Measures and Service Level Agreements Designed alternative Registration processes and workload responsibilities
- Determined the right size of the Waiting Room Identified Clinic capacity constraints and limitations

Emergency Department Simulation

Challenge:
The hospital needed to redesign their work processes, identify capacity constraints and operational bottlenecks, and determine mitigation approaches for the new ED. The facility is moving from 6 freestanding EDs to a single, combined unit. They are decreasing the number of inpatient beds in the new facility and will be one of the largest EDs in the nation. The client anticipates opening the new facility at full capacity since it is building a smaller hospital than it currently operates. Our challenge is to make the new facility fit ‘better’ through identification and implementation of best practices.

Approach:
FDI is developing a realistic simulation model of their Emergency Department. The project team is working with hospital personnel to apply the future processes to identify resource and capacity bottlenecks. FDI will evaluate best practices with anticipated volumes to determine which best practices and their associated resources will produce the most efficient and effective processes.

Results:
- This project is in process nearing completion having already identified significant findings.
- The client has signed 3 additional follow-on engagements.