

## Lehigh Valley Hospital and Health Network Uses Analytics to Grow Capacity and Improve Patient Flow

### At a Glance

#### Organization

Lehigh Valley Hospital  
and Health Network  
Allentown, Pa.

- 4th largest cancer program in Pennsylvania
- Nationally ranked regional heart center
- Major teaching facility of Pennsylvania State University Hershey Medical Center
- Level 1 Trauma Center
- Beds: 730
- Medical staff: 1,200 (more than 1,000 board-certified), representing 50+ specialties
- Inpatient visits per year: 42,000
- ED visits per year: 100,000

#### Solution Spotlight

- McKesson Performance Analytics™

#### Critical Issues

- Rising patient demand for emergency services
- High rate of ambulance diversions
- Long inpatient bed turnaround

#### Results

- Met capacity demands despite growth
- Reduced ambulance diversions by more than 80%
- Reduced ED wait times by 23.5%
- Reduced bed turnaround time from an average of 210 minutes per bed to an average of 60 minutes per bed

When Lehigh Valley Hospital and Health Network, in Allentown, Pa., was not meeting its capacity goals, significant process changes were necessary. By employing analytics in a healthcare performance management solution from McKesson, Lehigh Valley found the right combination of process improvements that would increase hospital and ED (emergency department) virtual capacity by decreasing hospital and ED length of stay. As a result, the health network reduced ambulance diversion, bed turnaround time and ED wait times, while boosting admissions.

#### Challenges

Lehigh Valley was faced with increased demand for services and an inability to manage its capacity. Operating rooms were put on hold, and transfer patients were being turned away — yet admissions were below the health system's goal.

Recognizing the systemic nature of the problem, executives at Lehigh Valley sought to identify throughput inefficiencies to find ways to expand capacity. During a management retreat, managers were challenged to generate ideas to help solve the organization's capacity problems. A newly formed capacity task force formulated and prioritized more than 1,000 ideas to address the capacity issues.

Overwhelmingly, the ideas focused on work processes and patient throughput.

#### Answers

To evaluate the success of these process changes for the capacity project, Lehigh Valley turned to McKesson Performance Analytics™, McKesson's healthcare performance management solution suite. The health network used the solution to integrate and analyze information from its ED, surgery, bed tracking, orders, severity, transfer, ADT and billing systems. Using time-stamped activity data, the organization determined how long a patient waited to be triaged, registered, admitted to an emergency bed, treated by the physician, and discharged either to the home or to hospital care.

By linking granular clinical data to the detailed financial data, Lehigh Valley examined not only the duration and sequence of clinical events but also the costs associated with those events down to the individual patient level. In addition, Lehigh Valley examined other sources of lost business, such as hours on ED divert status, the number of patients leaving without being seen, transfer center denials and operating room holds.

Armed with integrated care delivery information, Lehigh Valley initiated more than 50 interventions across all three campuses. To monitor

# Case Study

**“McKesson Performance Analytics helps us turn data into actionable information to define the problems, develop the solution and monitor the solution’s effectiveness.”**

**David Richardson, MD, FACEP**

*Associate Vice-Chair*

*Department of Emergency  
Medicine*

*Lehigh Valley Hospital  
and Health Network*

progress, the health network created a capacity scorecard using the customizable business intelligence system in McKesson Performance Analytics to provide easy, secure and timely access to financial, clinical and operational information, as well as role-based dashboards. The scorecard includes indicators for volume, length of stay, ED patient flow/demand, operating room (OR) holds in minutes, transfer center acceptance rates, bed turnaround times and discharges before 11 a.m.

## Results

The capacity project allowed Lehigh Valley to meet the community’s need for services despite unprecedented annual growth rates of 6.2% and 5.3% over two years. By implementing process improvements driven by clinical and financial data, Lehigh Valley reduced ambulance diversions by more than 80%, reduced ED wait times by 23.5%, and reduced bed turnaround time from an average of 210 minutes per bed to an average of 60 minutes per bed.

“The goal is to discharge patients within two hours of the discharge order,” explains David Richardson, MD, FACEP, associate vice-chair, Department of Emergency Medicine.

“Using analytics, we are able to drill down to discharge orders placed before 11 a.m., between 11 a.m. and 2 p.m., and after 2 p.m.”

The network can also drill down to see discharge orders by physician, physician group and hospital site. “We use that information to provide resources to physicians to meet the goal of discharging patients before 11 a.m. so that the bed can be freed for the next admission,” explains Dr. Richardson. “McKesson Performance Analytics helps us turn data into actionable information to define the problems, develop the solution and monitor the solution’s effectiveness.”

According to Courtney Vose, RN, director of emergency services, having easy access to evidence-based performance data allows the emergency department to objectively examine its processes and flexibly adjust to changing needs. “I am able to drill down to the exact time of day or exact patient population where throughput times were slow or ideal,” says Vose. “This information helps us to adjust staffing needs, re-educate the staff about processes put into place, and to plan for the future.”

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