



U.S. Department
of Veterans Affairs

Leading with Lean: A Collaborative, Interdisciplinary Approach to Optimize Throughput in the Emergency Department

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Introduction

- ❖ In a 2006 report, the Institute of Medicine (IOM) Committee on the Future of Emergency Care in the United States Health System, reported on the national crisis of Emergency Department (ED) crowding.¹
- ❖ EDs continue to face growing problems with crowding, delays, and cost containment.²
- ❖ To mitigate these issues, there has been an increased interest in implementing Lean in the healthcare sector.³
- ❖ As part of a strongly supported Lean transformational effort, the Veterans Affairs Palo Alto Health Care System (VAPA HCS) prioritized redesign of ED flow processes.

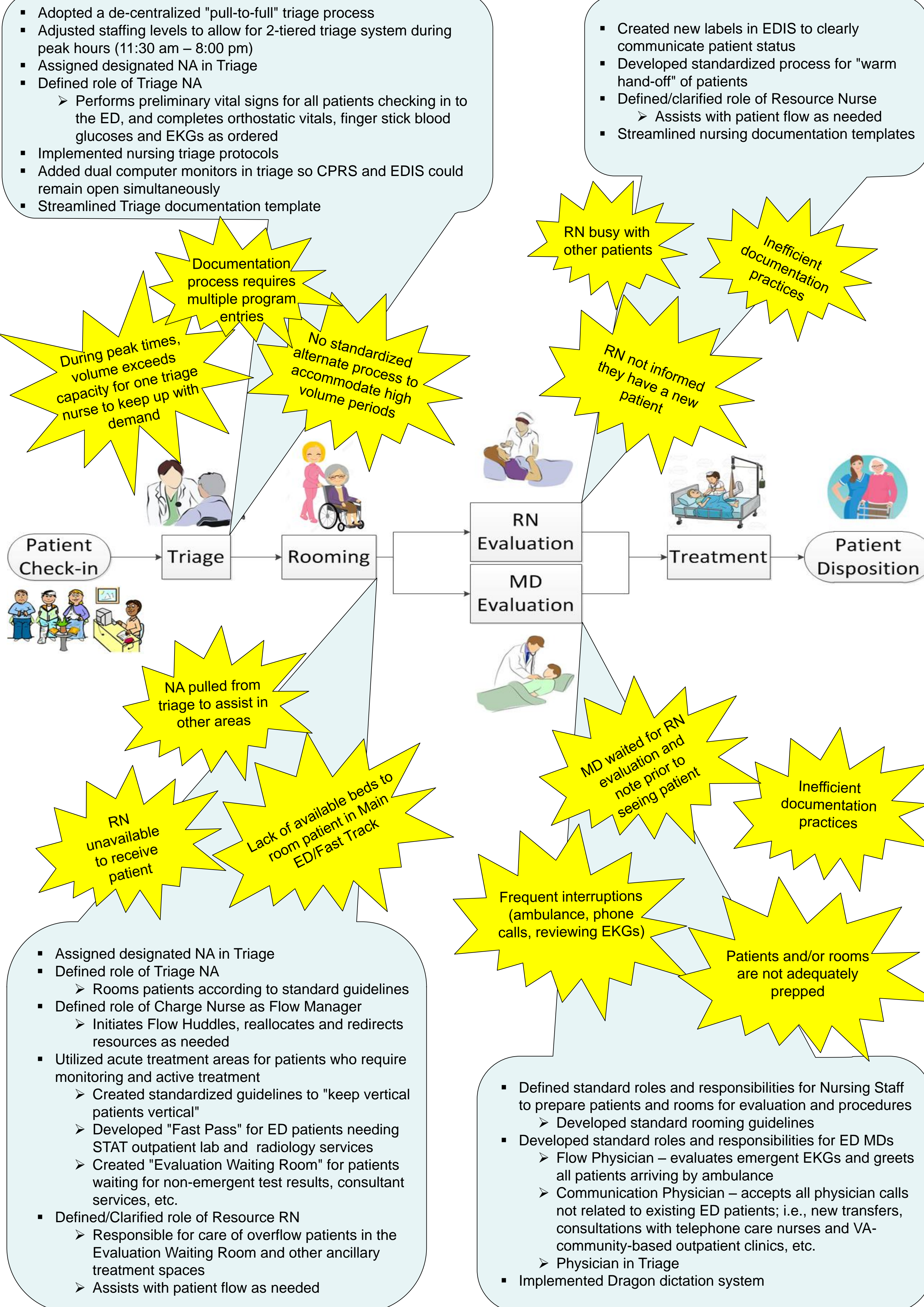
Methods

- ❖ The VAPA HCS initiated the ED Value Stream in May 2013 with the primary goals of improving patient throughput and reducing patient wait times.
- ❖ A series of Rapid Process Improvement Workshops (RPIWs) based on Lean systems redesign methods were completed from May 2013–December 2013.
- ❖ Each RPIW was led by a nurse and physician champion; at a minimum, each included the following ED staff: two physicians (MDs), two Registered Nurses (RNs), one Nursing Assistant (NA), and one Medical Support Assistant (MSA).
- ❖ Data was extracted retrospectively from the VHA Support Service Center (VSSC) for VAPA HCS and the 11 VA control sites. The data analyses were performed using a regression adjusted difference in difference approach.

Key Interventions

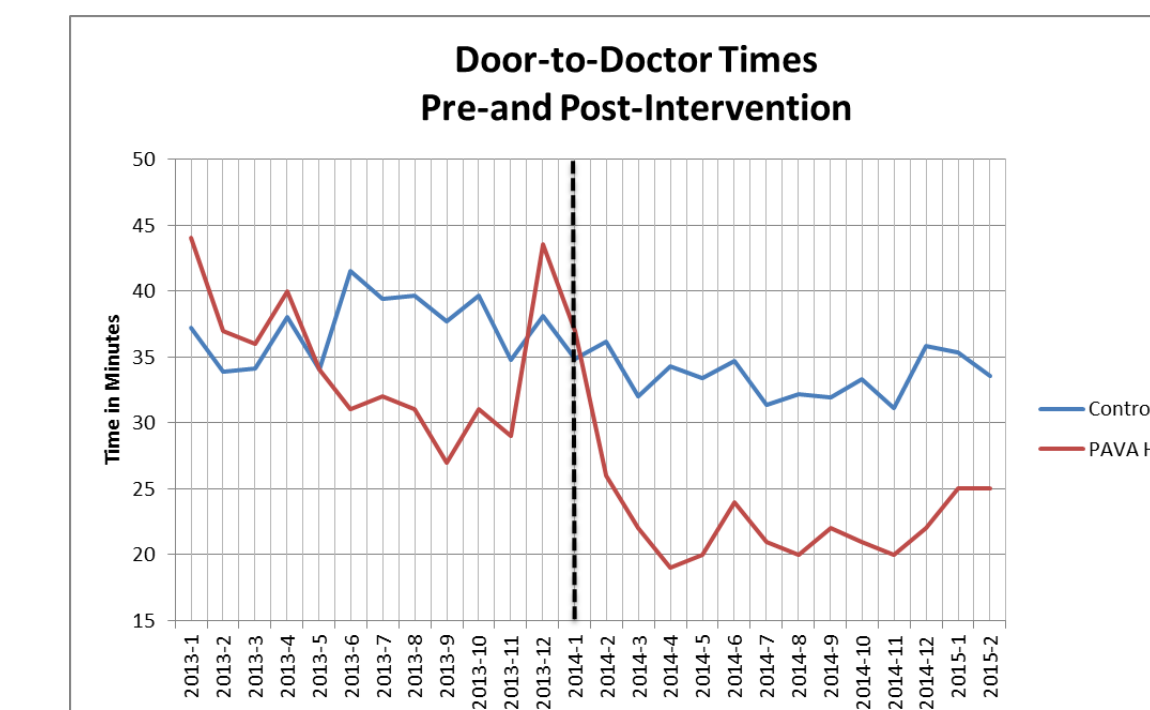
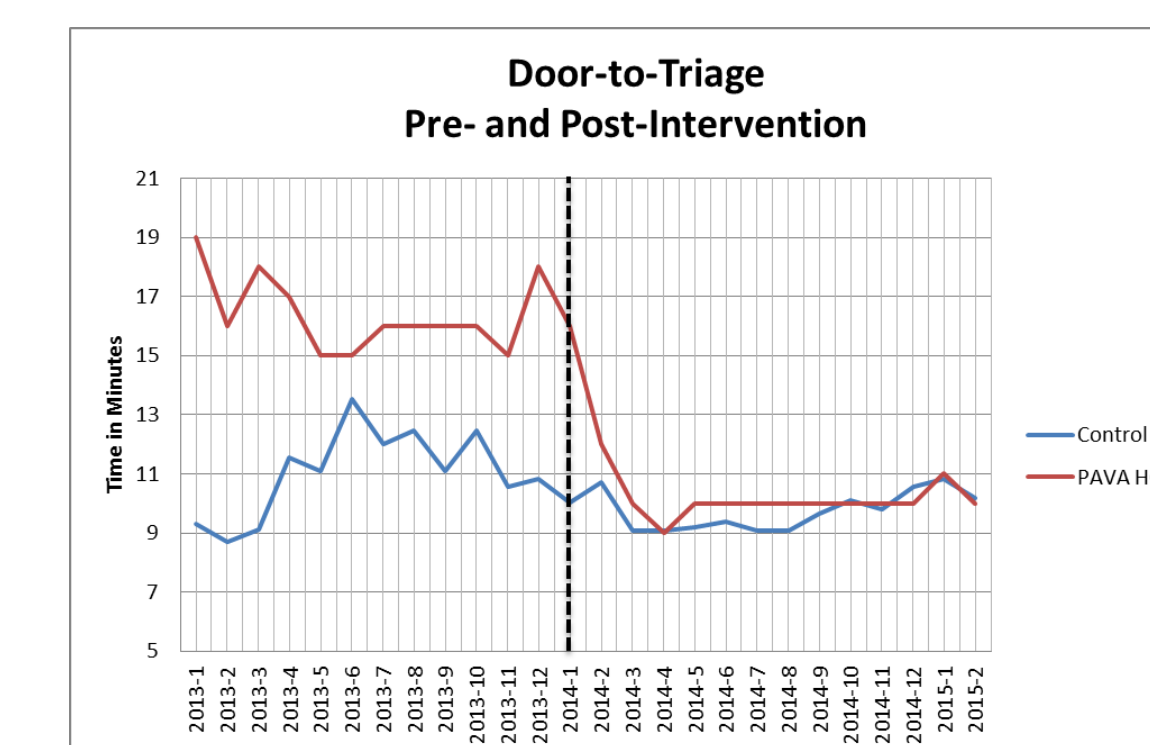
- ❖ Streamlined front-end clinical operations and documentation processes
- ❖ Delineated and defined key roles of ED personnel
- ❖ Implemented standard processes/guidelines for improved bed management and resource utilization
- ❖ Improved communication mechanisms

References:
1. Institute of Medicine (IOM). Hospital-Based Emergency Care: At the Breaking Point. Washington, DC: National Academy Press; 2006a.
2. Kellermann AL. Crisis in the emergency department. N Engl J Med. 2006;355(13):1300-1303.
3. Holden RJ. Lean thinking in emergency departments: a critical review. Ann Emerg Med. 2011;57(3):265-278.



Results

VAPA HCS (n=26 months)				
ED Characteristics	Pre	Post	Diff	P-Value
Average ED Volume (Patients/Month)	1483.1	1468.5	-14.62	0.80
Average Physician Workload (RVU/visit)	2.6	2.6	0.05	0.17
LOS, Discharged Patients (Minutes)	163.2	146.3	-16.85	<0.001*
LOS, Admitted Patients (Minutes)	398.7	356.5	-42.19	<0.001*
Door to Doctor Time (Minutes)	34.7	22.1	-12.60	<0.001*
Door to Triage Time (Minutes)	16.4	10.2	-6.23	<0.001*



Conclusions

- ❖ By using Lean principles, the VAPA HCS improved patient flow in the ED compared to similar control sites in the VA.
- ❖ Our findings show a statistically significant reduction in the following patient throughput indicators:
 - Door-to-Triage
 - Door-to-Doctor
 - Length of Stay for Discharged Patients
 - Length of Stay for Admitted Patients

Lessons Learned

- ❖ Multiple small process changes targeting root causes were key to achieving significant improvement.
- ❖ Engaging stakeholders throughout the improvement process was essential for buy-in and ownership.
- ❖ Daily management of processes and ongoing communication in huddles contributed to sustained positive outcomes.