

2014 Award for Outstanding CE Outcomes Assessment

Using Lean Processes to Gain Efficiencies in an Air Force Family Medicine Clinic: Tyndall Air Force Base and University of Tennessee Partner to Improve Multi-disciplinary Team Response to Patient Needs

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Situation Analysis: The United States Air Force (USAF) 325th Medical Group (MDG), located at Tyndall Air Force Base (AFB) in Panama City, FL, provides medical care to more than 36,000 active and retired military personnel and their families. The Family Health Clinic (FHC) is their primary care facility, treating basic health issues and providing referrals to specialists and for comprehensive diagnostic testing. Facing the challenges of traditional civilian provider clinics, the MDGs nationwide additionally receive directives from the USAF Surgeon General's Office to reduce the number of patients being referred to civilian physicians outside the USAF system in order to minimize the costs of patient care and allow patient populations to retain care in the Patient Centered Medical Home (PCMH) model within USAF.

The medical commander faced staffing decreases due to personnel temporarily deployed overseas or from permanent reassignments. Physician and nursing staff had been reduced by 33% and 50%, respectively. The clinic had noticeable patient flow problems that slowed access to medical care. A decentralized patient admission area, frequent interruptions for medical providers, disorganized supplies and equipment, and a check-in/check-out process contributed to long wait times for patients. The checkout process was disjointed and not standardized. If patients had to move from primary care to the referral office, the walk was long and time consuming.

Further complicating the process was the fact that responsibility for outbound physician referrals, once the domain of a separate contractor, had been returned to FHC staff, and no standards had been established to formalize the process. Required patient referrals to civilian specialists were of-



Award for Outstanding CE Outcomes Recipients (L to R): Keith Leitner, LeaAnne Law, Tracy Allgier-Baker - Alliance Awards Committee, Laura Maples, Jennifer Russomanno. Not pictured: Paul Skala, Lt. Col Kevin Poitinget, Capt Jeremy Hicks, Capt Liz Cameron, Maj Tristian Sverly, Capt Kris Walker, Lt Col Lionel Lyde, Sr Airman Benjamin Crespo.

ten delayed, cumbersome and needed rework. Record keeping was manual and tedious, frequently leading to information not being available to the physician during the patient visit.

Patients spent about 48.5 minutes in the clinic on each visit. The waiting room averaged 12.5 patients waiting to be seen. (Appendix, Slides 11, 12.) Unsurprisingly, patient satisfaction scores were poor.

In Fall 2011, Tyndall AFB requested the University of Tennessee (UT) College of Business Administration's Center for Executive Education to design a weeklong CE activity to educate interdisciplinary medical team leaders, facilitate process improvement projects designed by these front line leaders,

and monitor improvements over time. Tyndall AFB's goals were to:

- Improve access for patients while maintaining medical care continuity;
- Improve patient flow throughout the facility;
- Maximize skills, resources and personnel;
- Standardize processes;
- Improve timeliness for patients (i.e. wait times/duration of visits);
- Increase medical team productivity by reducing interruptions to physician time and improving throughput;
- Improve quality of information available to medical personnel (to include referrals).

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Educational Design

The UT team designed an agenda that would blend Lean process education specifically designed for healthcare professionals with value stream mapping exercises. Process analysis was conducted in real time within the clinic and combined with small group brainstorming, in-clinic observation, data gathering, and new process design to positively impact patient care by improving the efficiency of medical team members' time with patients.

Prior to the education and improvement activity, UT faculty traveled to Tyndall AFB Family Medicine Clinic to observe interactions within the clinic to gather data and determine baseline throughput processes; identify bottlenecks and roadblocks hindering efficiencies; and design a framework to develop effective applications-based solutions for identified ineffective processes.

Following this on-site recording of existing systems, UT faculty and staff collaborated at the University to design the curriculum, prepare materials to demonstrate current processes, define needed metrics, and plan the approach to new processes to be launched while multiple stakeholders – patients and their families or supporters, physicians, nurses, technicians, administrators, and referral contractors – moved through live, actively working clinic areas. The UT/Tyndall leadership team identified initial target areas for improvements and discussed logistical tactics to enable Lean deployment in the improvement area(s). UT worked with Tyndall AFB to identify key leaders with various medical training – physicians, nurses, technicians, practice managers, referral contractor representatives, and a disease management

leader – to participate in the education and launch the process improvement strategies within the clinic.

Tyndall AFB and UT entered into a joint sponsorship with UT College of Medicine to provide up to 37.5 continuing medical education credits to activity participants. Objectives for the educational design were to:

- Implement Lean theory in practice for processes designed to improve patient throughput;
- Target areas for rapid improvement in a healthcare setting;
- Identify ways to set the standards for flow improvement; and
- Create processes and tools that will translate to other USAF clinical settings.

Execution

The educational intervention to improve patient flow throughout the facility, maximize resources and use of skilled medical personnel, and standardize processes was timed to coordinate patient-centered medical home (PCMH) initiatives launching at Tyndall AFB in February 2012. The week of February 13, 2012, UT faculty and staff traveled to Tyndall AFB to teach and facilitate a five-day rapid performance improvement activity (sometimes called a Kaizen event, meaning “good change”) led by 15 frontline medical team leaders within the clinic.

Following group education on Day 1, participants were divided into small teams concentrating on specific processes ranging from the standardization of patient exam rooms, supply chain management, management of walk-in patients, scheduling, and use of physician and nursing resources.

The teams were encouraged to engage individuals within the clinic to brainstorm approaches and tactics to address challenges identified, and to design processes which could be replicated by clinics throughout the USAF medical system.

Daily team reports and executive briefings allowed the participants to make suggestions for units beyond their area of concentration for their small team groups and to gain progress updates. On Day 5, the final day of the educational activity, in anticipation for follow-up measurement and tactical assessments, project timelines were determined and data collection needs identified. In addition to process re-design for medical professionals within the clinic, a review and redesign of the physical layout of the facilities and supplies was paramount to further effecting much needed changes.

UT faculty and staff returned to Tyndall AFB June 25-27, 2012 to hear team reporting of improvement statistics, observe flow in the target areas, mentor team challenges, and recommend modifications. The follow-up to the initial reporting, re-energized the team toward stated goals, emphasized that Lean healthcare process improvement is a “continuous journey,” and provided medical command senior administration with an opportunity to consider steps and processes for the future.

Another return visit January 28-29, 2013 by UT faculty and staff provided another opportunity to examine data, realize the need for physician scheduling modifications and project reinforcement in some areas, and to embrace and celebrate successful transformations.

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Outcomes paired with Objectives

Clinical Objectives

- Maximize skills, resources and personnel.
- Standardize processes.
- Improve timeliness for patients (i.e. wait times/ duration of visits).
- Increase medical team productivity by reducing interruptions to physician time and improving throughput.

Educational Objectives

- Implement Lean theory in practice for processes designed to improve patient throughput.
- Target areas for rapid improvement in a healthcare setting.
- Identify ways to set the standards for flow improvement.
- Create processes and tools that will translate to other USAF clinical settings.

The teams discovered that several non-emergent ailments could best be treated by creating and publicizing clinic times devoted solely to specific medical need - a sore throat clinic, for example, was scheduled for 7:30 a.m.—10:30 a.m. each day, and sutures would be removed daily from 1:00 p.m.—3:00 p.m. By diverting these types of cases to nurses and tech staff, precious physician time was freed up for other patients. Patient flow through the treatment area was increased significantly without compromising the quality of care.

Other key improvements

- One central check-in desk was created to streamline the patient admission process.
- Treatment rooms were overhauled so that each room had the appropriate supplies stored in a standardized way. Physicians no longer had to leave patients to search for supplies, a common occurrence before the kaizen event. Technicians were charged with replenishing supply trays each night, and exact quantities needed were listed prominently on each storage bin.
- Templates were created for the 22 most common outbound referrals, which facilitated the data entry process, improved accuracy, and eliminated rework.
- Staff meetings were conducted on a single weekday during non-clinic hours. This eliminated another time-consuming interruption for physicians.

After these changes were implemented, the duration of patient visits dropped steadily and significantly over an eight-month period. From an initial high of 49.125 minutes for a clinic visit, check-in to check-out times per patient shrank nearly 43%, to 27.67 minutes by the final month of evaluation. The metric of *Patients Waiting to be Seen* improved by 64%, from an average of 12.5 patients to 4.5 patients.

The new referral template system drastically improved both speed and

accuracy: referrals to specialists were processed within 24 hours and with 75% fewer errors. Also, referral information was now available electronically in a patient's file whenever a physician needed to access it.

Nurses, a valuable constrained resource, had been handling an extremely large volume of telephone calls and telephone consultations (T-Cons), which were mostly related to appointments and access of care. After the teams learned about Lean processes and began examining phone call protocols, they recommended telephone services re-configure the automated telephone tree that handled incoming calls to "triage" calls for appointments and referrals first, and to route them exclusively to medical technicians to field. This new phone system produced metrics that demonstrated that telephone calls handled by nurses were reduced by 130-150 per week. Telephone consultations requiring follow-up by nurses were reduced by 30-35 per week.

For its efforts, Tyndall AFB 325th Medical Group took home a top Air Force incentive award for performance improvement by the Medical Home Performance Incentive Program in 4th Quarter, 2012. The command was also named #4 among 13 Air Combat Command Medical Treatment Facilities. 

ADDITIONAL DATA	BASELINE	JUNE 2012	JANUARY 2013	TOTAL IMPROVEMENT
Duration of visit (min.)	48.5	49.13	27.67	42.95%
Exam Room Waiting Time	Not Measured	12.9	8.2	36.43%
Avg. Patient/Waiting Room	12.5	8.9	4.5	64%