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Mini Review
Published: 30 Apr, 2018

Journal of Anesthesia Forecast

The Implementation of a Preanesthesia Testing Clinic-Our Experience

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Introduction

In today's healthcare environment, hospitals strive to provide safe patient care in an efficient manner. In 2009 in the United States it was estimated that unnecessary health care spending was $765 billion [1]. The preoperative evaluation clinic (PEC) is becoming a vital component in today's competitive and resource strained medical environment. The general objectives of the PEC are to reduce surgical cancellations and delays on the day of the elective surgical procedure and to reduce unnecessary routine testing and consultations. Kirkham et al. have concluded that significant variations continue to exist among institutions when ordering preoperative labs and tests for patients undergoing low-risk surgical procedures. Such over testing remains a challenge in spite of the efforts of grass root organizations campaigning to eliminate low value medical practices [2]. Bowen et al. demonstrated the value of a well-run PEC, as significant gaps in the preoperative evaluation process are identified and eliminated [3].

In 2009 our institution, an academic comprehensive cancer center, established the Preanesthesia Testing Clinic (PATC) with the goal of maximizing perioperative safety and efficiency. This was especially important because the oncologic patients at our institution tend to have a higher incidence of comorbid conditions, often resulting from the adverse effects of radiation and chemotherapy, and undergo high-risk surgical procedures. The goals of establishing the clinic included reducing cost by minimizing cancellations and delays on the day of surgery; improving patient safety by ensuring that patients were optimized prior to surgery, and reducing unnecessary testing and consultations; and thus, adding value to the perioperative process. Initially several obstacles were identified. Surgeons had to understand that the additional preoperative visit would actually lead to improved patient safety and improved efficiency on their operative days. The department of Anesthesiology had to commit to adopting and adhering to established clinical practice guidelines, to develop institutional comprehensive guidelines unique to our cancer and diabetic patient population, and to educating nurses and physician assistants recruited to staff the anesthesiology-led pre-evaluation clinic. Additionally, the hospital administration had to accept the idea that the economic support needed to establish, staff and run the clinic would be offset by the savings produced by reducing cancellations on the day of surgery and by elimination of unnecessary consultation and testing. After its first year, the PATC participated in a five day Rapid Improvement Event (RIE) utilizing lean techniques as employed by successful businesses with the goal of further maximizing value and efficiency.

The five step lean principles are to: 1) identify value to the customer, 2) map the value stream by eliminating waste, 3) create flow using tight sequence, 4) establish pull by the customer, and 5) seek perfection [4].

Methods

The RIE team consisted of a multidisciplinary group with representation from the PATC staff (clerk, RN, NP, and medical director), the surgical group, the anesthesiologist, the surgery coordinators, the OR schedulers, and the perioperative business manager. During the RIE, the initial phase was to review the current state of the PATC process from the perspective of the patient, surgeon and hospital; define the target state; and develop the gap analysis. The operating room cancellation data were provided by our analyst. Cancellations on the day of surgery were calculated over the 10 months prior to establishment of the PATC, and the 10 months following the RIE. The annual cost to run the PATC, the average duration of surgery and the per-hour cost of running an operating room were provided by our analyst. Savings were calculated by taking the average duration of surgery and multiplying it by the per-minute cost of running the operating room to arrive at a savings per cancelled case.

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Received Date: *19 Mar 2018*
Accepted Date: *25 Apr 2018*
Published Date: *30 Apr 2018*

Citation: *Lew MW, Gray RJ, Raytis JL. The Implementation of a Preanesthesia Testing Clinic-Our Experience. J Anesthesia Forecast. 2018; 1(1): 1003.*

Table 1: Confirmed State.

RIE Measure	Baseline	Target	Six month follow up
All general anesthesia surgery patients to be evaluated by PATC	55%	100%	92%
Door-to-Door Time	162 minutes	60 minutes	67 minutes
First start surgery delays attributed to missing/incomplete testing, evaluations and consents	15%	0%	2%
Patient Satisfaction	84.5%	100%	96.3%

Table 2: Gap analysis.

GAP	ROOT CAUSE
45% of Patients do not go through PATC	• Can't get an appointment because: • PATC does not meet physician and patient demand for an appointment • PATC is staffed inappropriately • PATC lacks sufficient appointment slots • Surgeons' perception that the PATC is duplicative and unnecessary
Distance traveled is 1290 steps	• Services located in different locations because: • Design and Layout • Function-focused vs. patient flow/experience focus

Table 3: Solutions.

IF WE…	THEN WE EXPECT…
Meet patients/physicians need for timely PATC appointments	• Increase in # of patients referred to PATC
Have adequate coverage when PATC staff has time off	• To continue to see the same number of patients
Establish a clear understanding of PATC and its benefits to the patient, surgeon and staff	• Surgeons will refer all general anesthesia patients to PATC
Can provide a PATC appointment on the same day that patient decides to have surgery	• More compliance from surgeons to refer patients to PATC • Reduce # of visits for patients
Arrange services by patient flow/experience focus vs. function-focus	• PATC activities to be organized by patient flow/experience • Increase the number of PATC appointment slots/capacity • Reduction in the distance travelled by the patient

Results

The pre-RIE state identified that: 1) patients arrive at the medical campus an hour before their PATC visit to complete registration, lab work, EKG, and chest x-ray; 2) the PATC appointment consists of a history/ focused physical examination, evaluation and risk assessment, medical optimization if needed and patient education; 3)the PATC sees an average of 9.7 patients per day, with 2 NPs, 2.75 RNs and 1 clerk; 4) fifty five percent of surgical patients were seen at the PATC; 5) the patients traveled 1290 steps (1/3 of a mile); and 6) the entire PATC process took 162 minutes. This was largely attributed to the inefficiencies of the PATC which caused frustration for the patient and staff [5]. Of all the surgical procedures, fifteen percent of first case cancellation/delay on the day of surgery was caused by missing or incomplete: 1) consents, 2) labs, and 3) history and physicals. On the other hand, patients who had a PATC visit the cancellation/delay rate was 2% (Table 1).

Based on the Lean Principles these revisions were implemented to improve the efficiency and satisfaction: 1) increasing the overall availability of the PATC by increasing staffing, extending hours, and streamlining work, 2) establishing an educational program to surgeons highlighting the benefits of the PATC, and 3) providing all preoperative services such as lab draws and preoperative EKGs at the PATC ("one stop shop").

Our six month follow-up demonstrated that the patients seen in the PATC increased from 55% to 92% of all surgical patients. Despite the increase in PATC volume, the percentage of incomplete labs, history and physical, consents missing were markedly decreased, thus essentially eliminating the cancellation/delay on the day of surgery. In addition, by developing a "one stop shop" the new distance travelled (315 steps) dramatically decreased by 76%, and the duration of the PATC visit was slashed by 59% (162 minutes to 67 minutes) (Table 2).

The annual cost to run the PATC was calculated to be $703,137 (mainly labor costs of three nurse practitioners, three registered nurses, and one clerk), the average surgical case duration was 2.63 hours and per-hour cost of running an OR was $1,645. Only six months after the PATC RIE, overall cancellations as a percentage of total surgical volume has decreased from 4.2% to 3.0%, with cancellations of patients seen by the PATC representing only 1.2% of the total surgical volume. Annualized savings of the PATC by reducing cancellations on the day of surgery was calculated to lie between $274,325 and $685,813, depending upon whether the 3.0% or 1.2% cancellation rate was used. The pre PATC Press Ganey patient satisfaction score was 84.5 and the six month followup score was 96.3 (Table 3).

Discussion

The PATC visit serves as the initial point of interaction for the surgical patient with the anesthesiology health care provider, and offers the opportunity for patients to make a lasting positive impression of not only our preoperative process, but of the institution and the specialty of anesthesiology as a whole. The PATC provides an opportunity to educate our patients and surgical colleagues about the importance of addressing co-existing disease and its impact on surgical risk and surgical care and to participate in shared decision making. At our institution a comprehensive PATC Preoperative Guidelines Booklet was developed to serve as a reference guide and is continually updated to reflect current guideline recommendations. This RIE project demonstrated that an organized PATC (with the addition of PATC staff) added value to the patient, surgeon, and the hospital. In addition, applying the lean principles can be an effective to address an issue and to implement change in a fairly rapid manner; in our case six months.

The two main obstacles or barriers, which resulted in patients not

being referred to the PATC were: 1) patients could not get a timely appointment, and 2) the perception that the PATC lacked value to the referring physician. The PATC process required the patient to visit the various services (registration, EKG, x-ray, labs) located throughout the hospital because the organization traditionally was function focused rather than a patient centered approach. The solutions involved addressing the patient and surgeon needs by: 1) increasing the availability of the PATC by increasing staffing, extending hours, and streamlining workflow, 2) establishing an educational program to the surgeons highlighting the benefits of the PATC, and 3) providing all of the services except x-ray within the PATC.

Conclusion

Our PATC has demonstrated monetary savings by reducing the number of cancellations on the day of surgery. While this value does not completely cover the annual cost of running the PATC, the PATC has proven to be valuable in other areas including patient safety, OR utilization, elimination of inappropriate testing, and improved patient and staff satisfaction. Such values indirectly result in a reduction of financial waste and unnecessary patient inconvenience. With the commitment of both the organization and key administrative and clinical leaders, the investment of the PATC RIE established value and eliminated waste. This led to improved patient and staff satisfaction as demonstrated by the change in the Press Ganey Patient Satisfaction score from a baseline of 84.5 to 96.3, which was the highest mean score amongst all of the outpatient clinics in our hospital. There was an increased acceptance and utilization of the preevaluation clinic by the surgeons and proceduralists.

References

1. Onuoha C, Arkoosh V, Fleisher L. Choose Wisely in Anesthesiology. JAMA Inter Med. 2014; 174: 1391-1395.
2. Kirkham K, Wijeysundera D, et al. Preoperative Testing before Low-risk Surgical Procedures. CMAJ. 2015; 187: E349-E358.
3. Bowen D, et al. The value of the visit: Quantifying the value added from a preoperative assessment. Perioperative Care and Operating Room Management. 2016; 3: 32-38.
4. Womack, James P, Daniel T Jones, and Daniel Roos. The Machine That Changed the World. 1990.
5. Harnett, Miriam JP, Correll Darin J, Hurwitz Shelley, et al. Improving Efficiency and Patient Satisfaction in a Tertiary Teaching Hospital Preoperative Clinic. Anesthesiology. 2010; 112: 66-72.