Assessment of Pre-Operative Evaluation Prior to Cataract Surgery

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BACKGROUND

Cataract surgery is a minor surgery. It takes about fifteen to twenty-five minutes on average to complete the operation. There is minimal blood loss and local anesthesia is used in a large majority of the cases. In this way, cataract surgery differs from major surgeries. In major surgery, it is traditionally required that the patients undergo an EKG, a chest x-ray, and routine laboratory testing as part of their pre-operative evaluation. The patient needs to be healthy enough to undergo the surgery so that peri-operative and post-operative complication risks are reduced. Due to the nature of cataract surgery, the question of whether pre-operative evaluation is necessary arises.

OBJECTIVE

1) Assess the current literature to gain perspective on the guidelines and protocols behind cataract surgery.
2) Understand how various departments of medicine are involved with cataract surgery.
3) Meet leaders in their respective fields to gain their perspective on cataract surgery.
4) Understand the patient perspective in the cataract surgery process.
5) Understand barriers to access-to-care for patients.
6) Understand the relationship between the cataract surgery process and its impact on the health care system.

LITERATURE

A literature search was conducted via the LVHN Intranet. PubMed, Cochrane, and AHRQ were amongst the databases used.

Article [1] concluded that marked variation exists within and across physician specialties in the use and rationale for use of medical tests in patients undergoing cataract surgery.

Article [2] analyzed the variations in behavior both in the United States and in other developed countries with regards to pre-operative evaluations. It concluded that great deviation existed which had obvious implications for cost and manpower.

Article [3] was a study assessing 19,557 elective cataract operations to see whether there was an impact on outcomes in patients who had pre-operative evaluation vs patients that did not have pre-operative evaluation before surgery. The article concluded that there was no significant differences between the no-testing group and testing group in the rates of intraoperative events.

Article [4] addressed the findings in Article [3]. It served as an information piece in order to update ophthalmologists on current evidence based literature. The bottom-line was that routine medical tests performed on patients before cataract surgery are unnecessary because they do not increase the safety of the procedure. Preoperative medical tests should only be ordered when a finding on a history or physical exam indicates a need, even if surgery is not being conducted.

Article [5] is a systematic review that brought together three separate studies. Each of the studies analyzed peri-operative complication rates in patients undergoing cataract surgery in a control group with no pre-op evaluation vs a comparison group that underwent pre-op eval. The three studies in the review ultimately supported the notion that pre-op medical testing in cataract surgery is not protective against adverse medical events.

The consensus that these articles all point to is that pre-operative evaluation is not necessary for patients undergoing cataract surgery.

PATIENT-CENTERED CARE

The assessment of practice protocols in ophthalmology revealed interesting insights into the patient perspective. The Joint Commissions requires that patients undergo an H&P within 30 days of undergoing cataract surgery. If that same patient undergoes another cataract surgery shortly after the 30 day period, they are required to have another H&P done. This is a barrier to access-to-care since insurance may not cover a second office visit.

A second H&P also delays the time between when the patient can undergo the next cataract surgery. There is an extra demand on the patient's time as they must now set aside another occasion to go through the process of seeing their PCP as well as other specialists once more. The situation is further burdened by the redundant testing that some PCPs make their patients undergo. The patients ends up having to pay for multiple visits and expensive tests partially out-of-pocket.

On the other hand, the physician team is willing to work with the patients to make their cataract surgery experience as comfortable as possible. While most patients undertake surgery with local anesthesia, there is always an anesthesiologist on hand that can sedate the patient. Under extenuating circumstances, when the patient knows that they cannot stay still, an assessment for general anesthesia can be made.

HEALTH SYSTEMS

At LVHN, the ideal progression for undergoing cataract surgery is the following:
1) Patient gets diagnosed with cataracts by the ophthalmologist
2) Patient sees their PCP for an H&P
3) PCP may or may not refer patient to specialists for further testing
4) Patient gets assessed by their anesthesiologist
5) Patient undergoes the cataract surgery.

In order to assess if this system is efficient, Geisinger Health System, located in northeastern and central Pennsylvania, was analyzed as well. Their patient process was very similar to the process outlined above. It differed only in that the patient spoke with the anesthesiologist over the phone instead of seeing them in person.

PROFESSIONAL PERSPECTIVE

After the conduction of the literature search, it was necessary to gather professional perspective at LVHN. The aim was to assess any key differences between the ophthalmology practice at LVHN and the guidelines set up by the American Academy of Ophthalmology with regards to pre-operative evaluation before cataract surgery.

Having met with ophthalmologists, internists, and medical staff at the surgical centers, the findings indicated that the guidelines were being followed at LVHN. Professional opinion was in line with the literature—pre-operative medical testing before cataract surgery is not necessary. Despite this discovery, there was miscommunication between the specialties.

The ophthalmologists, as per the Joint Commission, require that patients undergo a history and physical (H&P) within 30 days of their cataract surgery. The H&P is basically a form completion in the office. The H&P serves as a screen to determine if patients have any underlying medical history that would require referral to specialists. Ophthalmologists refer their patients to their primary care physicians (PCP) to undergo the H&P, however, some PCPs are under the impression that they still need to perform a full pre-operative evaluation, not just an H&P. Under this assumption, superfluous EKGs, Chest X-rays, and routine laboratory testing may be performed annually when an H&P is all that is required.

In order to address the issue of misinformation and miscommunication, LVHN created a 'Preop Lab Algorithm' tool and a 'PAT Triage Form' tool (*shown at the far right*). This tool assists physicians in referring patients to the correct specialist and to the correct lab testing. Awareness of this tool's existence is not as high as it should be and PCPs are therefore still prone to making the mistakes of ordering unnecessary pre-op testing.

Other causes for unnecessary medical testing include fear of lawsuits and dissimilar billing codes and paperwork that causes confusion.

ANALYSIS

At LVHN, the H&P that the patient undergoes falls to the PCP. The ophthalmologists are highly specialized and do not feel comfortable performing an H&P anymore. Due to the litigious society and medical lawsuits that accompany it, it is possible that ophthalmologists want to abdicate responsibility for an H&P to someone they feel has more experience with it. It is possible to shift the burden of the H&P to other physicians or health care professionals in order to reduce total physician visits, thus saving health care dollars and eliminating a barrier to access-to-care for the patient. Nurse practitioners or physician assistants can perform the H&P using the tools created by LVHN for further referral. Ophthalmologists can be trained to perform an H&P. The anesthesiologist can perform the H&P as well. The latter option would be best since anesthesiologists perform the final clearance on the patient regardless of what the H&P and other pre-op test results are. Since the patient must see the anesthesiologist, they might as well perform the H&P and clear the patient as well. Either of these options are viable within LVHN.

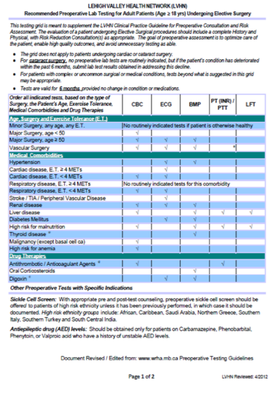
The society we inhabit is prone to lawsuits. Many doctors may still perform superfluous pre-op evaluations due to fear of missing something and being prosecuted. Some sort of tort reform would be necessary in order to protect doctors from lawsuits and lower the malpractice insurance. This reform would give current physicians incentive to take more responsibility upon themselves. Tort reform would take a more national approach to change.

Education of physicians on the process of cataract surgery may alleviate costs as well. By understanding the reasons for each step of the process, physicians can use their best judgment and all of the tools at their disposal to reduce unnecessary testing that occurs. Making more LVHN staff aware of the PAT Triage Tool and the Pre-op Lab Algorithm would save lots of money annually.

The 30 days H&P requirement mandated by Joint Commissions can be investigated. It is possible that the rule was implemented without enough evidence based studies performed. After a thorough investigation, findings may indicate that a different amount of days is a better number for having an H&P remain valid. Changing the Joint Commissions requirement would be a national change.

Creating a pre-op clinic at LVHN for patients would further eliminate barriers to access-to-care. The patients would be able to get diagnosed, have their H&P, and referrals to specialists all in a condensed amount of time.

PREOP LAB ALGORITHM



LEHIGH VALLEY HEALTH NETWORK (LVHN)
Recommended Preoperative Lab Testing for Adult Patients (Age ≥ 18 yrs) Undergoing Elective Surgery

This testing grid is meant to supplement the LVHN Clinical Practice Guideline for Preoperative Consultation and Risk Assessment. The evaluation of a patient undergoing Elective Surgical procedures should include a complete History and Physical, with Risk-Reduction Consultation(s) as appropriate. The goal of preoperative assessment is to optimize care of the patient, enable high quality outcomes, and avoid unnecessary testing as able.

- *The grid does not apply to patients undergoing cardiac or cataract surgery.*
- *For cataract surgery, no preoperative lab tests are routinely indicated, but if the patient's condition has deteriorated within the past 6 months, submit lab test results obtained in addressing this decline.*
- *For patients with complex- or uncommon surgical or medical conditions, tests beyond what is suggested in this grid may be appropriate.*
- *Tests are valid for 6 months, provided no change in condition or medications.*

Order all indicated tests, based on the type of Surgery, the Patient's Age, Exercise Tolerance, Medical Comorbidities and Drug Therapies	CBC	ECG	BMP	PT (INR)/ PTT	LFT
Age, Surgery and Exercise Tolerance (5 x 3)					
Minor Surgery, any age, any E.T.	No routinely indicated tests if patient is otherwise healthy				
Major Surgery, age < 50		√	√		
Major Surgery, age ≥ 50		√	√		
Vascular Surgery	√	√	√	√	
Medical Comorbidities					
Hypertension		√	√		
Cardiac disease, E.T. ≥ 4 MET's		√			
Cardiac disease, E.T. < 4 MET's	√	√	√		
Respiratory disease, E.T. ≥ 4 MET's	No routinely indicated tests for this comorbidity				
Respiratory disease, E.T. < 4 MET's		√			
Stroke / TIA / Peripheral Vascular Disease		√			
Renal disease	√	√	√	√	√
Liver disease	√		√	√	√
Diabetes Mellitus	√	√	√	√	√
High risk for malnutrition	√		√	√	√
Thyroid disease *	√		√		
Malignancy (except basal cell ca)	√				
High risk for anemia	√		√		
Drug Therapies					
Antithrombotic / Anticoagulant Agents †	√	√	√	√	
Oral Corticosteroids			√		
Digoxin		√	√		

Other Preoperative Tests with Specific Indications

Sickle Cell Screen: With appropriate pre and post-test counseling, preoperative sickle cell screen should be offered to patients of high risk ethnicity unless it has been previously performed, in which case it should be documented. High risk ethnicity groups include: African, Caribbean, Saudi Arabia, Northern Greece, Southern Italy, Southern Turkey and South Central India.

Antiepileptic drug (AED) levels: Should be obtained only for patients on Carbamazepine, Phenobarbital, Phenytoin, or Valproic acid who have a history of unstable AED levels.

Document Revised / Edited from: www.wrha.mb.ca Preoperative Testing Guidelines

Page 1 of 2 — LVHN Reviewed: 4/2012

Recommended Preoperative Lab Testing for Adult Patients (Age ≥ 18 yrs) Undergoing Elective Surgery

Legend - Tests

BMP	Electrolytes (sodium, potassium, chloride and bicarbonate), Plasma Creatinine and if available, eGFR, fasting plasma glucose
LFT	AST, ALT, Alk Phos, GGT, albumin, total and direct bilirubin

Legend - Patient Characteristics

Major Surgery	Resection of organs (laparoscopic or open incision) in the neck, thorax, pelvis or abdomen (including diagnostic laparoscopy and laparoscopic cholecystectomy); open vascular surgery (except varicose vein stripping); endovascular procedures; intracranial surgery; head and neck surgery for malignancy (except basal cell carcinoma), spine surgery (except for discectomy), major joint replacement or fusion, surgery involving free flap reconstruction, craniotomy
Minor Surgery	Defined by not meeting criteria for major surgery. Includes: eye surgery (except cataract removal), tonsillectomy, nasal septoplasty, breast surgery without free flap reconstruction, direct or laparoscopic inguinal or umbilical hernia repair, tubal ligation, uterine D&C, hysteroscopy, endometrial ablation, carpal tunnel repair, dupuytren's contracture release, basal cell ca resection with local reconstruction, arthroscopy, discectomy, endoscopic urology and electromotive therapy (ECT).
E.T. in METs	Exercise tolerance in ***metabolic equivalents (METs)***, as reported by the patient
≥ 4 METs < 4 METs	Able to complete one or more of the following: activities, or a more strenuous activity, without having chest pain or dyspnea: walk up a hill, run a short distance, or climb a flight of stairs Has chest pain or dyspnea with ≥ 4 METs activities or is unable to complete them for any reason
Cardiac Disease	Mi, Angina, CHF, Valvular heart disease, Atrial fibrillation or other Arrhythmia
Renal Disease	Gross proteinuria or elevated creatinine
Liver Disease	Includes jaundice, hepatitis, cirrhosis, hepatic metastases and ethanol abuse (defined as average intake > 2 standard drinks per day)
High Risk for Malnutrition	Includes BMI <18, unintentional ≥ 10% body weight loss over previous 6 months, inflammatory bowel disease, oral, esophageal, gastric, and pancreatic malignancy
High Risk for Anemia	Includes patients with a history of anemia, connective tissue disease (i.e. lupus, rheumatoid arthritis), inflammatory bowel disease, menorrhagia, gross hematuria or gastrointestinal hemorrhage

Legend - Notations

a	Vascular Surgery - Activated Clotting Time (ACT) usually used for monitoring by Surgical team. No need for PT / INR in advance unless the patient warrants screening for other identified reasons.
b	Thyroid Disease - No need for Thyroid Stimulating Hormone (TSH) unless patient is exhibiting symptoms of poor control, and test not obtained in the past 3 months.
c	Digoxin Screening - No need for serum digoxin level unless symptoms warrant
d	Antithrombotic Agents - If patient is utilizing antithrombotic agent (warfarin, dabigatran, rivaroxaban) or dual anti-platelet therapy with Aspirin plus Clopidogrel or Prasugrel, obtain CBC within one week of surgery. If patient had been receiving warfarin, obtain PT / INR on the day of surgery.

- Preoperative Pregnancy Testing: will be carried out by preoperative staff in any females under the age of 55, that has not had a hysterectomy or event rendering them unable to conceive, including the following patients: (1) Any menstruating pediatric or adolescent patient with parental consent, (2) Any female that cannot give history, and (3) Any female w/ fertility medication.
- Preoperative Type and Screen and Group and must not be carried out by surgeons and preadmission clinic staff using existing procedures.
- There are no routine indications for preoperative pulmonary function tests, spirometry or arterial blood gases.
- There are no routine indications for preoperative urinalysis, except specific surgeries, at surgeon's discretion
- Preoperative cultures are not for 30 days, provided no interim change occurred in patient's condition.
- Preoperative Consultations to a Primary Care Physician or Specialist should usually relate the reasons for preoperative assessment and the requested areas of focus for risk reduction recommendations.

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ROAD TO CHANGE

Improving efficiency, implementing cost-saving measures, and reducing the barriers to access-to-care indicated in the "Analysis" section requires coordination between a lot of people.

In order to bring about change, it would be crucial to convene a meeting at LVHN between all of the specialties involved in cataract surgery. Ophthalmology, internal medicine, anesthesiology, and staff from the surgical centers would need to be present. This panel would need to review the current process with one another making sure to elucidate on key aspects of their portion of the practice.. All the data should be reviewed and a consensus reached upon what the new hospital and practice protocols should be. Consensus alone, however, is not enough. It would also be necessary to implement incentive into the system so that physicians of the corresponding practices would change the previous system with what may initially seem disruptive. Finally, something to reinforce the new changes should be implemented as well.

In order to implement some of the more national changes such as tort reform and changes in the Joint Commission would require further work. Financially invested parties as well as legislators would need to be involved. A study could be performed to assess physician perspectives to understand what drives them to perform the superfluous pre-operative testing. Another study could be performed to assess peri-operative and post-operative complications in patients that have undergone an H&P 60 days before cataract surgery vs patients that undergo the control of 30 days before a cataract surgery. The findings of these studies could be brought before the legislators and governmental and nongovernmental payers that back current protocols and hospital guidelines in an effort to make change.

FUTURE DIRECTIONS

The findings of this project indicate potential areas for future research in the following areas:
1) Where does the burden of the H&P fall for prior to clearance for cataract surgery?
2) Study can be performed on physician perspective to see what percentage of physicians are actually performing superfluous testing and what their reasons are.
3) Study can be performed assessing motivation behind 30 day H&P validity rule instituted by the Joint Commissions. Alternative schedules can be explored.
4) Alternative systems for the cataract surgery process can be examined in various health networks throughout the nation.

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PAT TRIAGE TOOL

LEHIGH VALLEY HEALTH NETWORK
Preoperative Initiative
PAT Triage Form

Patient Name:
DOB:
Medical Record#:
Date of Surgery:
(or prose patient sticker here)

Surgeon's Name: Surgical Procedure:

Recommended Preoperative Screening Form for Adult Patients (Age ≥ 18 yrs) Undergoing Elective Surgery.
Please complete questions below for each patient. Staff are encouraged to use the algorithm on the reverse side of this form to guide pre-operative consult requests for LVHN patients.

Please answer each question below by circling YES or NO:

1) Are you short of breath or develop chest pain when climbing a flight of stairs?	YES	NO
2) Is it hard to walk several blocks and do light work (i.e., household chores)?	YES	NO
3) Do you need assistance to do daily activities? (Bathing, cooking, walking, etc)	YES	NO
4) Do you have high blood pressure that requires medication for control?	YES	NO
5) Do you get chest pain, have a history of heart disease, heart attack, heart surgery, pacemaker defibrillator, heart stents, or angioplasty?	YES	NO
6) Have you ever had a stroke, TIA ("mini-stroke"), carotid artery blockage or surgery, blood clots, or circulation problems?	YES	NO
7) Are you currently taking anti-coagulants or blood thinners? Examples include, but are not limited to: Coumadin (Warfarin), Plavix (Clopidogrel), Effient (Prasugrel), Pradaxa (Dabigatran), Xarelto (rivaroxaban), Lovenox (Enoxaparin sodium), or Eliquis (apixaban).	YES	NO
8) Do you have a history of excessive bleeding after dental procedures or surgery, a history of anemia, or have you seen a doctor for bleeding or blood clotting?	YES	NO
9) Do you have asthma, lung disease, sleep-apnea, or use home oxygen or a CPAP?	YES	NO
10) In the past 6 years, have you been on steroids (prednisone) for longer than 2 weeks?	YES	NO
11) Have you had an organ transplant?	YES	NO
12) Have you ever been told that you have elevated blood sugar levels or Diabetes?	YES	NO
13) Do you have kidney problems, problems passing urine, regularly see a kidney specialist (nephrologist) or receive dialysis?	YES	NO
14) Do you have a history of liver disease?	YES	NO
15) Are you being treated for cancer?	YES	NO
16) Do you have a history of chronic pain needing pain medication or do you take methadone?	YES	NO
17) Do you have Parkinson's Disease, tremors, seizures, dementia, or need assistance with instrumental Activities of Daily Living (i.e., keeping a check book)?	YES	NO
18) Do you suffer from anxiety or depression?	YES	NO
19) Do you have a history of problems with anesthesia such as nausea, vomiting, high fever or trouble placing a breathing tube?	YES	NO
20) Do you have a history of heartburn (GERD), stomach ulcers or a hiatal hernia?	YES	NO
21) Do you have a history of thyroid problems?	YES	NO
22) Do you have arthritis of the neck, back, knees, hips, shoulders, or spinal stenosis?	YES	NO
23) Please list any other medical condition not mentioned above:		

Form Sent To: (list name, address, phone number of PCP or Specialist)

Comment Section for Staff Feedback or Patient Detail (please cite question):

Staff Name (PRINT):	Signature:	Date:

PAT Triage Form - Version II, October 2013
(Do not include as part of the permanent medical record)
Page 1 of 2

Disclaimer: This algorithm is meant as a guide for preoperative consultation recommendations and processes.

Check off the "YES" answers next to the question from the front page. Then follow the associated recommendations for Preoperative Consultation

If Questions 1 - 17 are all "NO" - there is not a strong indication for a medical consultation preoperatively. Any consult at that point should be at surgeon's discretion (noted at bottom).

Check if "Yes"	Question	Recommendation	If Yes, then:
	1	Patient should be referred for face to face Primary Care Physician visit prior to surgery if any of these questions are "YES" for preoperative consultation.	
	2		
	3		
	4		If YES due to Pacemaker / Cardiac Device, please request Device Form (from Cardiology consultant) and/or refer to the patient's Device Clinic
	5		Please request anticoagulation management plan from consultant
	6		
	7		
	8	When requesting consultation Indicate the areas noted as "YES" so that the consultant can be sure to cover key areas for risk assessment and mitigation.	
	9		
	10		
	11		Consider consult evaluation from prior transplant surgeon
	12		
	13		If on Opiates, consider consultation from Nephrologist
	14		
	15		Consider consultation from Oncology provider
	16		Ensure adequate pain management plan is developed
	17		Consider consultation from Geriatrician
	18	Patient should be referred for face to face PAT visit prior to surgery if any of these questions are "YES"	Focused Questions for Anesthesia Consultation
	19		
	20		
	21		
	22		
	23		

Manage as directed by surgeon

If a patient does not have a PCP, then please ensure patient connects via telephone prior to surgery with the LVHN PAT Center.

When form is completed, please forward to PAT and to Primary Care Physician or Specialist Provider with consultation request (if applicable). This will facilitate clear expectations of consultation and focused risk assessment to improve patient outcomes.

FOR SURGEON'S OFFICE / PAT Center:
If all questions 1-16 are "NO", is there an inherent risk of surgery that warrants a PCP visit?
Please explain and indicate whether risk is high, medium or low.

PAT Triage Form - Version II, October 2013
(Do not include as part of the permanent medical record)
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