



United Kingdom Pre-Operative Association
Pre-Surgical Testing and Evaluation (Across the Pond)



Content of Discussion

- Issues with the Pre-Operative Preparation
- Differences in the Pre-Operative Assessment between the U.S. and the U.K.
- Challenges at My Own Institution
- Improvements Made and Results Achieved
- Where We are Headed/What's Next?
- Questions



Worldwide Issues with Pre-Operative Preparation

- Increased co-morbidities of patients
- Increased complexity of operations
- Massive cultural shifts create enormous language barriers
- No clear standards for evaluating patients pre-operatively
 - Anesthetics are very safe
 - Not a first-line of scientific interest



Differences in UK and USA Approach

UK	USA
■UK requires all patients to have access to pre-op evaluation	■USA pre-op evaluation is often surgeon's choice
■Considered part of required Pre-surgical process	■Limited reimbursement - cost center
■Managed more commonly by specialized nursing	■Managed by nurses, Anesthesiologists and/or hospitalists




Lutheran General

- Suburban Chicago, IL
- Teaching Hospital
- 617 Beds
- 23 Operating Suites
- 19,000+ cases per year



Lutheran General has been recognized 10 times as one of the 100 Top Hospitals and 15 top major teaching hospitals in the US. Since 1999, Lutheran General has been rated by US News & World Report as being one of America's Best Hospitals, and received 'top 50 in the nation' rankings for medical excellence and advanced capabilities in many specialties.



Status of Evaluation at Lutheran General Hospital Two Years Ago

- Existing processes included:
 - Registration and Insurance Verification
 - Patient/Nurse Interview with Information Entered into Electronic Medical Record
 - On-site Laboratory Testing and EKG
 - Pre-Op Teaching
 - Very limited critical thinking skills by nursing personnel



Case Study

- 42 y/o African American male for ankle fusion. Pt reported history of moderate use of alcohol and remote use of recreational drugs. When asked by the nurse “no other medical problems right”... he said no.
- 62 y/o female for anterior mediastinal mass. Pt reported history of hypertension, controlled.



Changes Made During the Past Two Years

- Appointed a Medical Director
- Added HealthQuestionnaire the Internet based pre-surgical assessment tool
- Provided extensive nursing education in critical pre-surgical thinking skills
- Provided algorithms
- Incorporated Hospitalists into the process



Results from Changes to PST Process

■ Reduced Delays and Cancellations

- After year 1, medical issue related cancellations decreased from approximately 5% to less than 1%
- Existing Delays and Cancellations are uniformly patients who have not been seen by PST

■ Avoidance of Last Minute Clearances

- Performing timely review of abnormal labs
- Performing timely review of abnormal EKGs



Results, Continued

- Development of Critical Thinking Skill in PST Nurses
 - Watch Dog: Beta Blockers, Diabetes Management, Airway Issues, Pacemaker Information, Stent Information
 - Coagulation Management
 - Process for avoiding inadvertent elective operation on patients with cardiac stents
 - Monitoring Medication Management-paper based list of medications (283 meds) to avoid prior to surgery (hard to keep current)
 - Attempting to contact all first cases to prevent delays
 - Recognizing missing health data (stress tests, echo, cath lab results) from outside facilities and offices



Results, Continued

■ Development of Office Relationships

- Surgeons, Primary Care Doctors and Cardiologists now more consistently and uniformly informed
- Minimal, if any, resistance to proper preparation processes
- Improved communication with surgeons offices (essential to viability of surgical services in US hospitals where “surgeon is the customer”)



Results, Continued

- Diabetes Protocol for Pre-Op and Intra-Op is now moving to a house-wide ICU implementation
- Algorithms for Beta Blockers, Diabetes, Sleep Apnea, Pulmonary, Abnormal Liver Function Test, Cardiac have been developed and are available in paper (soon to be online)



Results, Continued

- Successful Hospitalist Program Underway
 - Developed Strong Relationship with the two Hospitalist groups. All unassigned patients (who do not have an internist on staff) are offered a hospitalist (surgeon request/nurse encouraged)
 - Direct improvement of patient care
 - Improved Surgeon Satisfaction
 - Teaching Service Hospitalist
 - Review all problem charts
 - Contact Primary Care MD for problems (case example)
 - Teaching and guidance to nursing staff
 - Resident elective under development



Where We are Headed: Taking the Next Step

- Despite improvements and results, opportunities for further improvement and refinement still exist:
 - We have contact with only 40-50% of all patients, resulting in tremendous inconsistency of care
 - We are primarily a “cost center” yet there are immense opportunities for cost containment and proper coding for insurance
 - Automating Labs- driven by anesthesia protocol
 - Obtaining HealthQuestionnaire© on every patient to uncover missing health history
 - Improving IT decision support for nurses



What is next for Lutheran General?

- Further leveraging information technology to improve process
- Sharing information with other institutions

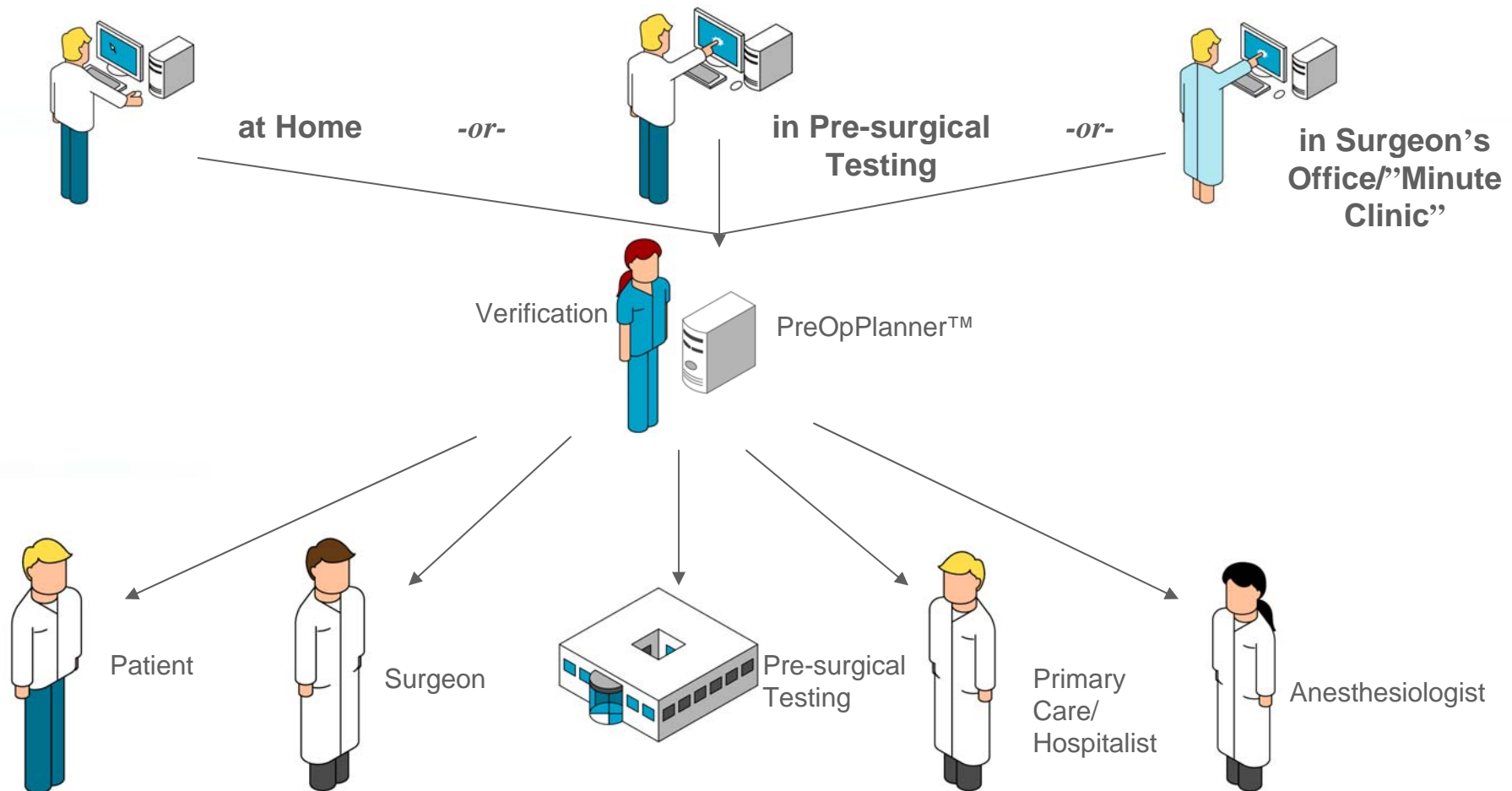


Leverage Information Technology to Improve Our Processes

- Current Report :HealthQuestionnaire Report
- Addition of PreOp Planner
 - Required Labs
 - Direct FAX or E-Mail transmission of requirements to Primary Care Doctors
 - Anesthesia Evaluation
 - Template for H and P
- Gather Additional Information from Surgeon's Office to Advance IT Process (SAM form)

Data Capture and Flow

Patient completes HealthQuestionnaire™





Health- Questionnaire Report

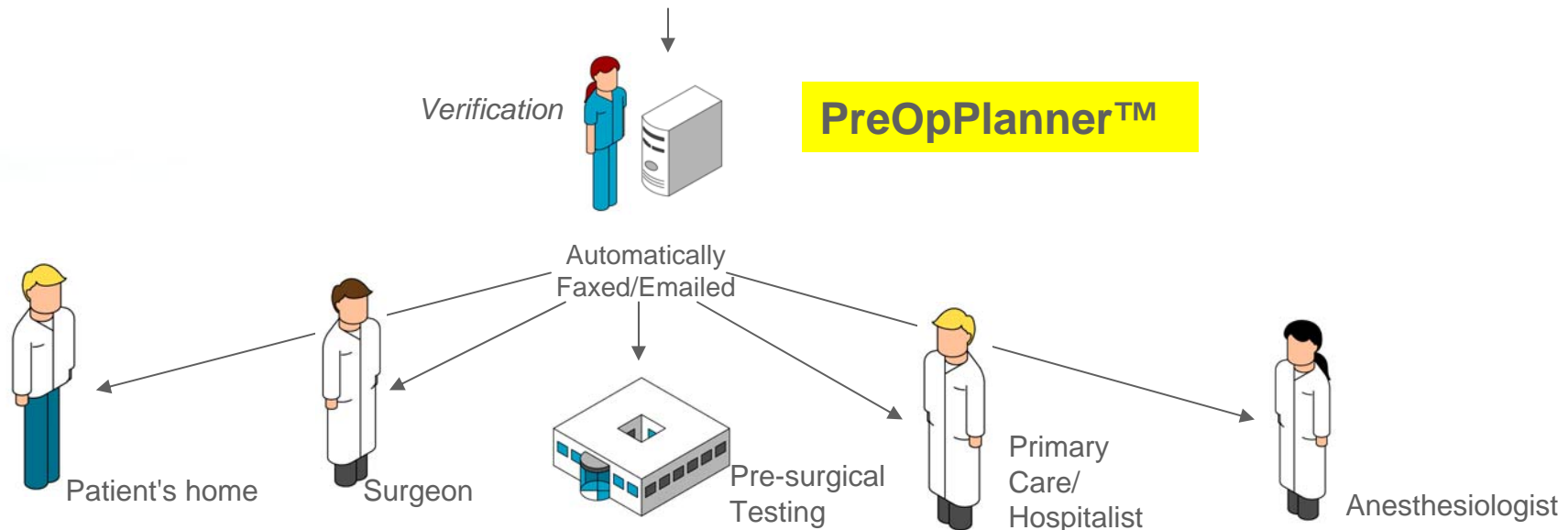
Name: Janice Sample	Administrator: Prompte Admin	Completion Time: 00:11
Medical Record Number: 15959302	Temp MRN:	Enterprise ID:
Case Id: a23222		
Home Phone: 999.555.6135	Site: Prompte Test	HQS Medicine: 4
Work Phone: 999.555.5265	Physician:	HQS Anesthesia: 4
Cell Phone: 999.555.1461	Surgeon: Swelle, Awls, Dr.	Procedure Risk: 5
Age: 51 yrs	Evaluation Date: 05/14/2007	Procedure Cardiac Risk: High
Gender: Female	Procedure: Thoracotomy	

Report reviewed and verified by Prompte Config (9/17/2007 11:19:44 AM)

HQSm	Physical	HQSm	Neurological System
1	Height: 168 cm / 66 in Weight: 73.03 kgs / 161 lbs BMI: 26, normal Blood pressure: 140/70 Pulse: 89 Respiration Rate: 21 Oxygen Saturation: 96% Temperature: 98.4 F / 36.89 C	3	H/O chronic muscle weakness/wasting
			Urinary & Reproduction System
			HQS has no output to report
			GastroIntestinal System
		2	H/O GERD
		2	Current ETOH excess
			Blood & Coagulation System
		3	Patient takes Coumadin, Lovenox, Plavix, Pletal, or Ticlid Daily ASA/NSAID use
			Anesthetic Issues
		4	H/O previous anesthesia H/O previous difficult intubation - Requires Anesthesia Consult -- Comments: Dr. Jones told patient that he needed to use a bronchoscope
		4	H/O latex allergy
			Other Conditions
			Multiple Sclerosis
HQSm	Cardiovascular System		
2	METS = 4 Moderately decreased functional class		
2	H/O elevated cholesterol and/or triglycerides -- treated		
2	H/O hypertension, x 10 year(s) -- treated -- well controlled (<160/100mm Hg)		
	Past cardiac studies performed:		
	-- EKG		
	-- Hospital: Community Hospital		
	-- Echocardiogram		
	-- Stress test		
	-- Cardiac catheterization		
3	H/O previous MI, x 1 -- Dr. Diagnosed MI -- hospitalized		
3	H/O angioplasty, x 1 -- Hospital/Doctor: Community Hospital -- Cardiac Stent has been placed		

Data Flow of PreOpPlanner™

Results of HealthQuestionnaire™



Medication instructions	Processed questionnaires	Worksheet for pre-op preparation	Processed questionnaire	Questionnaire score 3 & 4
Diet instructions	Lab requirements		Lab requirements	Will review chart and may schedule visit
Test requirements	Optimization requirements		Optimization requirements	
Day-of-surgery instructions,	Algorithms		Algorithms	
Others	Specialty instruction		Specialty instruction	
	Safety warnings		Safety warnings	



Medical Optimization and Anesthesia Clearance

		Medical Optimization				
		Procedure Risk				
		1	2	3	4	5
HQ Score (Medicine)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

		Anesthesia Clearance				
		Procedure Risk				
		1	2	3	4	5
HQ Score (Anesthesia)	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



History and Physical

<p>Pre-Procedure History and Physical</p>	<p>Patient Name: Janice Sample Medical Record Number: 15959302 Temp MRN: Enterprise ID: Case Id: a23222 Age: 51 Date Of Birth: 10/10/1955 Sex: Female</p>
<p>Planned Procedure: Thoracotomy History of Present Illness:</p> <hr/> <hr/> <hr/>	<p>HQS (Med): 4 HQS (Anesth): 4 Procedure Risk: 5</p>
<div style="border: 1px solid black; padding: 5px;"> <p>Allergies Allergens Penicillins Reaction: Rash/Hives</p> </div>	<div style="border: 1px solid black; padding: 5px;"> <p>Surgeries (Past) - Abdominal Aortic Aneurysm Repair (2004) - Angioplasty (2005)</p> </div>
<p>Past Medical History: H/O elevated cholesterol and/or triglycerides - treated H/O hypertension - treated - well controlled < 160/100mm Hg H/O of previous MI x 1 H/O arrhythmia - symptomatic - treated H/O asthma H/O chronic bronchitis H/O emphysema/COPD - untreated H/O TB or TB exposure - +PPD or Tine test - treated H/O sleep apnea Patient not pregnant H/O GERD</p> <p>Family History: No output to report</p> <p>Social History: Language: English H/O tobacco use - cigarettes - ex smoker - quit <1 year ago - 50 pack year history H/O EtOH excess</p>	<p>Review of Systems:</p> <p>Cardiovascular System BMI: 26, normal METS = 4 Moderately decreased functional class Denies H/O chest pain with activity Denies H/O valvular heart disease Denies H/O orthopnea Denies H/O PND Denies H/O cardiomegaly Denies H/O CHF</p> <p>Pulmonary System Denies Recent H/O of pneumonia</p> <p>Endocrine System Denies H/O diabetes</p> <p>Ophthalmology No output to report</p> <p>Neurological System H/O chronic muscle weakness/wasting Denies H/O stroke Denies H/O seizure disorder Denies H/O syncope</p> <p>Urinary and Reproduction System Patient not pregnant Denies H/O hematuria Denies H/O renal dysfunction Denies Pregnancy</p>



History and Physical

Anesthesia History:

H/O sleep apnea
H/O previous anesthesia
H/O previous difficult intubation - **Requires Anesthesia Consult**
H/O latex allergy

Other Conditions:

Multiple Sclerosis

Gastrointestinal System

Denies H/O liver dysfunction
Denies H/O hepatitis B or C

Blood and Coagulation

Patient takes Coumadin, Lovenox, Plavix, Pletal, or Ticlid
Daily ASA/NSAID use
Denies H/O easy bleeding or bruising

Medications

Coumadin
Route: Oral

Lisinopril
Route: Oral
Dosage: 10 mg
Frequency: Daily

Atenolol
Route: Oral
Dosage: 25 mg
Frequency: Daily

Low-Dose Aspirin
Route: Oral
Dosage: 81 mg
Frequency: Daily

Pre-Procedure Vital Signs **Ht:** 168 cm / 66 in. **Wt:** 73.03 Kgs / 161 lbs. **BMI:** 26,normal (HQS:1)

BP: ___ **HR:** ___ **Resp:** ___ **Temp:** ___ **SaO₂:** ___

Physical Examination:

H EENT: _____
Neuro: _____
Heart: _____
Chest: _____
Other: _____

ECG, Lab, Etc:

Surgical Assessment:

Surgical Plan:

Anesthesia Consultation Record



Anesthesia Consultation Record		Patient Name: Janice Sample Medical Record Number: 15959302 Temp MRN: Enterprise ID: Case Id: a23222 Age: 51 Date of Birth: 10/10/1955 Sex: Female
I. Pre-Anesthesia Evaluation:		
Planned Procedure: Thoracotomy History of Present Illness: <hr/> <hr/> <hr/>		HQS (Med): 4 HQS (Anesth): 4 Procedure Risk: 5
Allergies Allergens Penicillins Reaction: Rash/Hives		Surgeries (Past) - Abdominal Aortic Aneurysm Repair (2004) - Angioplasty (2005)
Past Medical History: H/O elevated cholesterol and/or triglycerides - treated H/O hypertension - treated - well controlled < 160/100mm Hg H/O of previous MI x 1 H/O arrhythmia - symptomatic - treated H/O asthma H/O chronic bronchitis H/O emphysema/COPD - untreated H/O TB or TB exposure - +PPD or Tine test - treated H/O sleep apnea Patient not pregnant H/O GERD Family History: No output to report Social History: Language: English H/O tobacco use - cigarettes - ex smoker - quit <1 year ago - 50 pack year history H/O EtOH excess Anesthesia History: H/O sleep apnea H/O previous anesthesia H/O previous difficult intubation - Requires Anesthesia Consult H/O latex allergy Other Conditions: Multiple Sclerosis		Review of Systems: Cardiovascular System BMI: 26, normal METS = 4 Moderately decreased functional class Denies H/O chest pain with activity Denies H/O valvular heart disease Denies H/O orthopnea Denies H/O PND Denies H/O cardiomegaly Denies H/O CHF Pulmonary System Denies Recent H/O of pneumonia Endocrine System Denies H/O diabetes Ophthalmology No output to report Neurological System H/O chronic muscle weakness/wasting Denies H/O stroke Denies H/O seizure disorder Denies H/O syncope Urinary and Reproduction System Patient not pregnant Denies H/O hematuria Denies H/O renal dysfunction Denies Pregnancy Gastrointestinal System Denies H/O liver dysfunction Denies H/O hepatitis B or C Blood and Coagulation Patient takes Coumadin, Lovenox, Plavix, Pletal, or Ticlid Daily ASA/NSAID use Denies H/O easy bleeding or bruising

Anesthesia Consultation Record



Medications
Coumadin
 Route: Oral

Lisinopril
 Route: Oral
 Dosage: 10 mg
 Frequency: Daily

Atenolol
 Route: Oral
 Dosage: 25 mg
 Frequency: Daily

Low-Dose Aspirin
 Route: Oral
 Dosage: 81 mg
 Frequency: Daily

NPO Since: _____

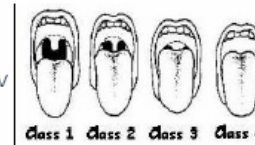
Pre-Procedure Vital Signs **Ht:** 168 cm / 66 in. **Wt:** 73.03 Kgs / 161 lbs. **BMI:** 26,normal (HQS:1)
BP: ____ **HR:** ____ **Resp:** ____ **Temp:** ____ **SaO₂:** ____

Physical Exam:

Airway Evaluation:

Hx Difficult Intubation:
 Neck Mobility F.R.O.M.:
 Thyromental Distance > 6cm:

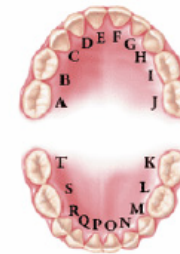
Mallampati Class: I II III IV



H EENT: _____
 Neuro: _____
 Heart: _____
 Chest: _____
 Other: _____

ECG, Lab, Pre-Op W/U, Etc:

ECG: _____ Hgb: _____ Chemistry: _____



ASA: _____

Anesthesia Plan:

Physician Signature: _____ Time: _____ Date: _____

II. Post Anesthesia Evaluation

Post Op Anesthesia Note:

No Apparent Anesthetic Complication May transfer patient from PACU with appropriate discharge criteria

Anesthesiologist Signature: _____ Time: _____ Date: _____



SAM Form

REGISTRATION FORM/SAM Form
Please FAX to PST @ xxx-xxx-xxxx

Name: _____ ID: _____ DOB: _____
 Patient Home Tele: _____ Work # _____ Mobile # _____
 Surgeon: _____ Procedure: _____ Procedure Date: _____
 Primary Care: _____ Specialist(s)/Cardiologist: _____

Past Surgery:	Date	Past Surgery:	Date
_____	_____	_____	_____
_____	_____	_____	_____

Allergies: Medical Products		Type of Reaction		
<u>Medication Product Name</u>	<u>Rash / Hives</u>	<u>Difficulty Breathing</u>	<u>Other</u>	
Latex	_____	_____	_____	
Adhesive Tape	_____	_____	_____	
Betadine / Surgical Scrubs	_____	_____	_____	
IVP dye / Contrast Materials	_____	_____	_____	
_____	_____	_____	_____	

Allergies: Food and Medication		Type of Reaction			
<u>Medication Allergy Name</u>	<u>Nausea/Vomiting</u>	<u>Rash / Hives</u>	<u>Difficulty Breathing</u>	<u>Other</u>	
_____	_____	_____	_____	_____	
_____	_____	_____	_____	_____	

Medications, Vitamins, Minerals and Herbal supplements:

<u>Item Name</u>	<u>Dosage</u>	<u>Frequency</u>	<u>Item Name</u>	<u>Dosage</u>	<u>Frequency</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Past Cardiac Studies

	<u>Location</u>		<u>Location</u>
EKG? Yes / NO	_____	Echocardiogram? Yes / NO	_____
Stress Test? Yes / NO	_____	Cardiac Catheterization? Yes / NO	_____



Pre-Op Specific Web Site

- Preoperative information exists, but in many different places
- Provide centralized location for preoperative information
- Improve patient experience with a “one stop shop”

Pre Anesthesia Evaluation and Testing (PAET) Center *online information resource*



[General Info](#)[HealthQuest](#)[Planning for Surgery](#)[Day Before Surgery](#)[After Surgery](#)[Welcome](#)[Phone Numbers](#)[Directions:](#)

- [Hospital Campus](#)
- [Pre-Anesthesia Evaluation and Testing Center](#)

[Parking and Maps:](#)

- [Hospital Campus](#)
- [Pre-Anesthesia Evaluation and Testing Center](#)

[Guest Services](#)[Patient Bill of Rights](#)[Notice of Privacy Policy](#)[Financial Assistance](#)[Registering for Surgery](#)[Advance Directives](#)

- [Durable Power of Attorney](#)

[Additional Resources:](#)

- [College of Surgeons](#)
- [Smoke Free Now](#)
- [Smokefree.gov](#)
- [PRAA](#)

WELCOME TO ADVOCATE LUTHERAN GENERAL HOSPITAL

Thank you for choosing Advocate Lutheran General Hospital as your Healthcare Provider. We will do our best to make sure that you are well informed and prepared for your surgery. Lutheran General has been recognized 10 times as one of the 100 Top Hospitals and 15 top major teaching hospitals in the country. We believe you will be pleased with your choice to have surgery at Advocate Lutheran General. We aim to be your partner in health, your Advocate.

[General Info](#)[HealthQuest](#)[Planning for Surgery](#)[Day Before Surgery](#)[After Surgery](#)[Welcome](#)[Pre-Anesthesia Evaluation and Testing Staff](#)[Hours](#)[What to Bring for Your Visit](#)[Phone Numbers](#)[SAM Form](#)[Preparing Yourself:](#)

- [Smoking](#)
- [Drinking Alcohol](#)
- [Exercise](#)
- [Recreational Drugs](#)

[Parking and Maps:](#)

- [Hospital Campus](#)
- [Pre-Anesthesia Evaluation and Testing Center](#)

[Directions:](#)

- [Hospital Campus](#)
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[Additional Resources:](#)

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- [Smokefree.gov](#)
- [PRAA](#)

[FAQs](#)

WELCOME - PLANNING FOR SURGERY

Dear Patient,

Pre-Anesthesia Evaluation and Testing is a free service offered by Advocate Lutheran General Hospital. Our staff of specially trained Registered Nurses, Hospitalists and Anesthesiologists carefully evaluate your medical history for any issues which need special attention before undergoing surgery. We are also focused on health concerns that may cause a delay or cancellation of your surgery. We strongly encourage all patients to take advantage of this service because of the added safety it provides. In addition, there is a strong focus on education to our patients who are undergoing any procedures at Advocate Lutheran General.

We have a full Lab and EKG service available on site. (These services will be billed to your insurance carrier.) Should your physician choose to obtain these tests in his or her office, please have the results faxed to 847-723-2249.

OBTAINING YOUR MEDICAL HISTORY

We offer two means of obtaining and evaluating your history. You may schedule a visit or take our on line *HealthQuest*. We strongly encourage patients having major operations that involve joint surgery, bowel surgery, lung or cardiac surgery to visit in person. We encourage you to still complete *HealthQuest* on line in the comfort of your home to speed your visit. However, we strongly feel the opportunity to provide you with additional health information and education is well worth the visit.

Obtaining your History using *HealthQuest*: You must call our office at 847-723-7372. We will take your registration information and give you a unique code. You will then log into this web site and click on *HealthQuest*. You will have 48 hours to complete *HealthQuest* after you receive your unique code. After 48 hours your code will expire and you will need to call us again for another code.

We can assure complete confidentiality because the results of your questionnaire are only associated with the unique code. The computers store your name separately for your security.



General Info

HealthQuest

Planning for Surgery

Day Before Surgery

After Surgery

Introduction

Pre-Operative Phone Call /
Instructions

Day of Surgery

Learning About Anesthesia

Pain Management Options

Virtual Tours

Additional Resources:

- [College of Surgeons](#)
- [Smoke Free Now](#)
- [Smokefree.gov](#)
- [PRAA](#)

[FAQs](#)

INTRODUCTION - DAY BEFORE SURGERY

On the day before surgery you may have certain preps or scrubs. In this section we outline some of these special needs. You will be receiving a call from Pre-Surgery to tell you what time to arrive and answer any of your minute questions. Please print the form for [Pre-Operative Phone Call](#) for use on this call so that we can make better use of your time.

Please also plan ahead as you will not be able to eat or drink on the [day of surgery](#). You'll also need to make arrangements for someone to take you home [after surgery](#). Patients are never allowed to drive themselves home. You must have a responsible driver in order to be discharged.

If you have last minute questions about any of this information on the day before surgery including whether you should stop a certain medication, please call 847-723-7400.



General Info

HealthQuest

Planning for Surgery

Day Before Surgery

After Surgery

Introduction

Staying Overnight

Visiting Hours and Phone
Numbers for Surgical Units

Recovery at Home

Extended Care

Additional Resources:

- [College of Surgeons](#)
- [Smoke Free Now](#)
- [Smokefree.gov](#)
- [PRAA](#)

INTRODUCTION - AFTER SURGERY

Immediately after surgery, you will go to the recovery room. In general, family members are not allowed to visit in the recovery room in order to respect the privacy of other patients. If you are planning on staying overnight, your family will be informed by the host in the Surgical Family Waiting Area, where you will be going after surgery.

If you are an outpatient, you will go from the regular recovery room to "phase 2." In phase 2, you will be able to see your family. Prior to going home we will assess your readiness for discharge. The nurses in this area will make sure that you can take pain medicine, drink liquids and urinate. Once you have met all the requirements, you will be discharged. Patients are never allowed to drive themselves home. You must have a responsible driver in order to be discharged.

www.advocatehealth.com

1.800.3.ADVOCATE / TDD 630.990.4700

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Sharing information with other institutions

- Working with advisory board
- Hosting site visits
- Conducting on-site assessments
- Providing process improvement recommendations
- Presenting findings and listening to challenges faced elsewhere



Questions?



Available of Literature

Correll, Darin, Angela Bader, Melissa Hull, Cindy Hsu, Lawrence Tsen, and David Hepner. "Value of Preoperative Clinic Visits in Identifying Issues with Potential Impact on Operating Room Efficiency." *Anesthesiology*. Vol. 105, No 6, Dec. 2006: 1254-1259.

Fischer, Stephen P. "Cost-effective Preoperative Evaluation and Testing." *CHEST*. May 1999: 115:96S-100S.

Gibby, Gordon. "How Preoperative Assessment Programs Can Be Justified Financially to Hospital Administrators." *International Anesthesiology Clinics: Preoperative Evaluation and Cost Containment*. Vol. 40 No 2. Spring 2002: 17-29.

Hokeks, M.Sc. et al. "Guidelines for Cardiac Management in Noncardiac Surgery Are Poorly Implemented in Clinical Practice: Results from a Peripheral Vascular Survey in The Netherlands." *Anesthesiology*. Vol. 107, No. 4, Oct. 2007: 537-544.

Parker, Brian, John Tetzlaff, David Litaker, and Walter Maurer. "Redefining the Preoperative Evaluation Process and the Role of the Anesthesiologist." *Journal of Clinical Anesthesia*. Aug 2000: 350-356.

Stonemetz J, Pham JC, Marino RJ, Ulatowski JA, Pronovost PJ. "Effect of Concurrent Computerized Documentation of Comorbid Conditions on the Risk of Mortality Index." *Journal of Clinical Outcomes Management*. Sep 2007. http://www.turner-white.com/jc/abstract.php?PubCode=jcom_sep07_mortality.