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**Master's Thesis**

**CRITICAL NURSING CARE OF PATIENT HAVING SURGERY,  
PREOPERATIVE PHASE.**

**Master of Science in Nursing**

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## **Abstract**

Preparation of the patient for surgery involves a series of preventive measures, both general and local, to prevent complications, such as during surgery and in the postoperative period. Patient preparation for surgery and transfer to the operating room are two priority processes defined within the procedures and conditions for authorization of health care services by the Ministry of Social Protection.

The aim of this scientific work was to develop an algorithm of clinical management based on the evidence on patient preparation for surgery and transfer to the operating room.

A process divided into four phases (confirmation of the development group, systematic review of secondary literature, participatory consensus method, and preparation and writing of the final document) was performed. Each of the standardized techniques and procedures is used to develop evidence-based manuals.

Evidence-based recommendations on pre-anaesthetic assessment, preoperative management of medical conditions, education and patient communication, informed consent, patient transfer to the surgical area, surgical site marking, strategies for infection prevention and checklist were performed.

It is expected that with the use of this algorithm the incidence of events that produce morbidity and mortality in patients undergoing surgical procedures will be minimized.

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## **Introduction**

Surgery is an invasive procedure to treat injuries, diseases, and deformities, having a serious stressful experience for patient in the hospital. The client has little control over situation or the outcome. This results in having of anxiety, fear, and powerlessness. As with trauma, the surgery itself is a physiological stressor affecting all major body systems. The nurse can reduce this stress and place patient in the best condition possible to undergo the surgery. Before the surgery, the nurse must prepare clients for the specific invasive procedure, telling them what to expect during the surgery and afterwards, validate, clarify, and reinforce information the patient has received from the surgeon or other members of the surgical team. In addition, during the nursing assessment before surgery, problems may be identified that warrant further patient assessment or intervention before the procedure. As required communication and collaboration with the surgical team are essential so that correct actions are taken to achieve the desired outcome. There are three phases in the surgical process: preoperative, intraoperative, and postoperative. The patient's readiness for surgery is critical to the outcome. Preoperative care focuses on preparing the patient for the surgery and patient safety.



## **Preoperative Phase**

The preoperative period begins when the patient is scheduled for surgery and ends at the time of transfer to the surgical unit. The nurse functions as an educator, an advocate and a promoter of health. The surgical environment demands the use of knowledge, judgment, and skills based on the principles of nursing science.

The primary roles in the preoperative phase are to provide emotional and psychological support for patients and their families, reinforce explanations and instructions given to the patients and family by the physician and registered nurse, assist in data collection for developing the patient's plan of care. Other health team members assist in preparing the patient for surgery. The physician obtains a medical history, performs a physical examination, and orders diagnostic testing. Registered nurses perform a baseline preoperative assessment, provide explanations and instructions, offer client and families emotional and psychological support to decrease anxiety, develop a plan of care, and then verify the patient's name, surgical site, allergies, and related information when the patient arrives in the surgical waiting area. When preparing a patient for surgery and developing a nursing care plan, the goal is to identify and implement actions that reduce surgical risk factors. Preoperative care focuses on helping the patient

achieve the best possible surgical outcome by being in the healthiest possible condition for surgery.

## **Nursing assessment of the preoperative patient**

**Subjective Data:** Health History Questions

Demographic information: Name, age, marital status, occupation, roles?

History of condition for which surgery is scheduled: Why are you having this type of surgery?

Medical history: Any allergies including (food, medication, animal), acute or chronic conditions, current medications, pain, or prior hospitalizations?

Surgical history: Any reactions or problems with anesthesia? Previous surgeries?

Tobacco use: How much do you smoke? Pack-year history (number of packs per day 3 number of years)?

Alcohol use: How many alcohol drinks per day? How many times?

Coping techniques: How do you usually cope with stressful situations? Support systems?

Family history: Hereditary conditions-diabetes, cardiovascular, renal, respiratory, anesthesia problems?

Female patients: Date of last menses and obstetrical information?

**Objective Data:** Body System Review

Vital signs, oxygen saturation, Height and weight

Emotional status: calm, anxious, tearful

Neurological: ability to follow instructions

Skin: color, warmth, bruises, lesions, turgor, dryness, mucous membranes

Respiratory: infection: cough; breath sounds; chronic obstructive pulmonary disease; respiratory rate, pattern, and effort; barrel chest

Cardiovascular: angina, myocardial infarction, heart failure, hypertension, valvular heart disease, mitral valve prolapses, heart rate and rhythm, peripheral pulses, edema, jugular vein distention

Gastrointestinal: bowel sounds, date of last bowel movement, abdominal distention

Musculoskeletal: deformities, weakness, decreased range of motion, crepitation, gait, artificial limbs, prostheses

When taking a history, nurse screen the patient for problems that increase the risk for complications during and after surgery:

**Age**

- Older than 65 years

**Medications**

- Antihypertensives
- Tricyclic antidepressants
- Anticoagulants
- Nonsteroidal anti-inflammatory drugs (NSAIDs)

**Medical History**

- Decreased immunity

- Diabetes
- Pulmonary disease
- Cardiac disease
- Hemodynamic instability
- Multisystem disease
- Coagulation defect or disorder
- Anemia
- Dehydration
- Infection
- Hypertension
- Hypotension
- Any chronic disease

### **Prior Surgical Experiences**

- Less-than-optimal emotional reaction
- Anesthesia reactions or complications
- Postoperative complications

### **Health History**

- Malnutrition or obesity
- Drug, tobacco, alcohol, or illicit substance use or abuse
- Altered coping ability

### **Family History**

- Malignant hyperthermia
- Cancer
- Bleeding disorder

### **Type of Surgical Procedure Planned**



- Neck, oral, or facial procedures (airway complications)
- Chest or high abdominal procedures (pulmonary complications)
- Abdominal surgery (paralytic ileus, venous thromboembolism)

Medical history is important to obtain because many chronic illnesses increase surgical risks and need to be considered when planning care. For example, a patient with systemic lupus erythematosus may need additional drugs to decrease the stress of the surgery. A patient with diabetes may need a more extensive bowel preparation because of diminished intestinal motility. An infection may need to be treated before surgery. Nurse has to ask the patient specifically about cardiac disease because complications from anesthesia occur more often in patients with cardiac problems. A patient with a history of rheumatic heart disease may be prescribed antibiotics before surgery. Cardiac problems that increase surgical risks include coronary artery disease, angina, myocardial infarction within 6 months before surgery, heart failure, hypertension, and dysrhythmias. These problems impair the patient's ability to withstand hemodynamic changes and alter the response to anesthesia.

Older patients are at increased risk for complications. The normal aging process decreases immune system functioning and delays wound healing. The frequency of chronic illness increases in older patients. In addition, reductions of muscle mass and body water increase the risk for dehydration.

Drugs and substance use may affect patient responses to surgery. The use of tobacco increases the risk for pulmonary complications because of changes it causes to the lungs and chest cavity. Excessive alcohol and illicit substance use can alter the patient's responses to anesthesia and pain medication. Withdrawal of

alcohol before surgery may lead to delirium tremens. Prescription and over-the-counter drugs may also affect how the patient reacts to the operative experience.

A normal fluid and electrolyte balance decreases complications. Patients should be well nourished to adequately heal and recover from surgery. Higher levels of protein, vitamin C, and zinc (tissue growth, skin integrity, and cell-mediated immunity) are required. Obese or underweight patients may not heal as well and may have complications. Obese patients have more respiratory problems and wound healing difficulties, such as delayed healing and wound dehiscence. Emaciated individuals may have more infections and delayed wound healing because they lack the nutrients needed for tissue healing. Identifying patients at risk and providing preoperative intervention reduce the risks of surgery for these patients. Kidney function affects the excretion of drugs and waste products, including anesthetic and analgesic agents. If kidney function is reduced, fluid and electrolyte balance can be altered, especially in older patients. Nurse should ask about problems such as urinary frequency, dysuria, nocturia, and oliguria.

A sensitivity or allergy to certain substances alerts nurse to a possible reaction to anesthetic agents or to substances that are used before or during surgery. For example, povidone-iodine (e.g., Betadine) used for skin cleansing contains the same allergens found in shellfish. Patients who are allergic to shellfish may have an adverse reaction to povidone-iodine. The patient with an allergy to bananas and other fruits may also have a latex sensitivity or allergy.

## **Surgical consideration for the older patients**

Older adults usually have limited physiological reserve, resulting in decreased ability to compensate for changes that occur during surgery. There is increased risk for hemorrhage, anemia, fluid/electrolyte imbalance, and infection. Increased risk for complications is secondary to age-related loss of blood vessel elasticity and decreased cardiac, respiratory, and renal reserves. Nursing interventions should be aimed at these age-related changes before, during, and after the surgical procedure to help reduce complications.

Preoperatively:

- Reassure the patient and family.
- Pad bony prominences to protect against pressure ulcers and muscle and bone discomfort.
- Teach what to expect before, during, and after surgery, diet changes, description and length of surgical procedure, activities in the recovery room, pain management, coughing and deep breathing exercises, procedures, and treatments (e.g., dressings, catheters).
- Ensure preoperative screening: blood work, radiographic studies, nutritional assessments, pulmonary function tests, electrocardiogram.

## Preoperative Diagnostic Test

Laboratory tests before surgery provide baseline data about the patient's health and help predict potential complications. The patient scheduled for surgery in an ambulatory surgical center or admitted to the hospital on the morning of or day before surgery may have preadmission testing performed from 24 hours before the scheduled surgery. These test results are usually valid unless there has been a change in the patient's condition that warrants repeated testing or the patient is taking drugs that can alter laboratory values (e.g., warfarin, aspirin, diuretics). Some hospitals have time limits for tests, especially pregnancy testing or any other test results that would require altering the surgical plan.

Diagnostic Test	Purpose
Chest x-ray	Detect pulmonary and cardiac abnormalities
Oxygen saturation	Obtain baseline level and detect abnormality
Arterial blood gases	Obtain baseline levels and detect pH and oxygenation abnormalities
Bleeding time	Detect prolonged bleeding problem
Blood urea nitrogen	Detect kidney problem
Creatinine	Detect kidney problem
Complete blood cell count	Detect anemia, infection, clotting problem
Electrolytes	Detect potassium, sodium, chloride imbalances
Fasting blood glucose	Detect abnormalities, monitor diabetes control
Pregnancy	Detect early, unknown pregnancy
Partial thromboplastin time	Detect early, unknown pregnancy
Pregnancy Urinalysis	Detect early, unknown pregnancy Detect infection, abnormalities

Nurse has to report electrolyte imbalances or other abnormal results to the anesthesia team and the surgeon before surgery. For example- Hypokalemia: increases the risk for toxicity if the patient is taking digoxin, slows recovery from anesthesia, and increases cardiac irritability. Hyperkalemia: increases the risk for dysrhythmias, especially with the use of anesthesia.

An electrocardiogram maybe required for all patients older than a specific age who are to have general anesthesia. The age varies among but is often 40 to 45 years. An ECG may also be required for patients with a history of cardiac disease or those at risk for cardiac complications. It provides baseline information on new or existing cardiac problems, such as an old myocardial infarction . A patient with a known cardiac problem may need a cardiology consultation before surgery. Drugs for problem prevention, such as nitroglycerin and antibiotics, maybe needed throughout the surgical period to reduce or prevent stress on the heart. Abnormal or potentially life-threatening ECG results may cause the cancellation of surgery until the patient's cardiac status is stable.



## **Planning and implementation surgical patients**

As the nurse, it has to ensure coordination of care for the patient before surgery. This responsibility continues until the patient is transferred to the operating room.

Preoperative teaching provides information about common surgical preparation procedures and routines:

- Date and time of admission and surgery

Admission procedures: arrive about 2 hours before surgery to allow preparation time

- Length of stay, items to bring and wear
- Recovery
- Family information: where to wait during surgery and who communicates patient's status to them
- Discharge criteria: after outpatient surgery, a responsible adult must take the patient home.

The patient needs to know what to expect during and after surgery and participate in his or her recovery as indicated by consistently demonstrating these behaviors:

- Explaining in his or her own words the purpose and expected results of the planned surgery
- Asking questions when a term or procedure is not known
- Adhering to the NPO requirements
- Stating an understanding of preoperative preparations (e.g., skin preparation, bowel preparation).

### **Preoperative consent**

Before performing surgery, it is the physician's responsibility to obtain voluntary, written, informed consent from the patient. The consent gives legal permission for the surgery and has two purposes. It protects the patient from unauthorized procedures, and it protects the physician, anesthesiologist, hospital, and hospital employees from claims of performing unauthorized procedures. A consent is needed for all invasive procedures, anesthesia, blood administration, and radiation or cobalt therapy.

Informed consent involves three elements.

(1) The physician must tell the patient in understandable terms about the diagnosis, the proposed treatment and who will perform it, the likely outcome, possible risks and complications of treatment, alternative treatments, and the prognosis without treatment. If the patient has questions before signing the consent, the physician must be contacted to provide further explanation to the patient. It is not within the nurse's scope of practice to provide this information.

(2) The consent must be signed before analgesics or sedatives are given because patients must demonstrate that they are informed and understand the surgery.

(3) Consent must be given voluntarily

It is often nursing role to obtain and witness the patient's or authorized person's signature on the consent form. Nurse should ensure that the person signing the consent form understands its meaning and that it is being signed voluntarily. If the patient is unable to read, the entire consent must be read to the patient before it is signed. Patients are unable to give consent if they are unconscious, are mentally incompetent, are minors, or have received analgesics or drugs that alter central nervous system function within time frames specified by agency policy. Consent can be obtained in any of these cases from parents, next of kin, or legal guardians.

In a medical emergency, the patient may not be able to give consent. In this case the next of kin or legal guardian may give telephone consent, or a court order can be obtained. If time does not permit this, the physician documents the need for treatment in the chart as necessary to save the patient's life or avoid serious harm, according to state law and institutional policy.





## **Patient preparation for surgery**

Bowel or intestinal preparations are performed to prevent injury to the colon and to reduce the number of intestinal bacteria. Evacuation of the bowel is needed when a patient is having major abdominal, pelvic, perineal, or perianal surgery. Enemas ordered to be given until return flow is clear is a stressful procedure, especially for the older patient. Bowel preparations can be exhausting, and nurse must take safety precautions to prevent falls.

Prepare the patient for possible placement of tubes, drains, and vascular access devices. Tubes of all sorts are common after surgery. The patient may need an indwelling urinary catheter before, during, or after surgery to keep the bladder empty and to monitor kidney function. The patient having abdominal or genitourinary surgery usually has a Foley catheter.

A nasogastric tube may be inserted before abdominal surgery to decompress or empty the stomach and the upper bowel. More often, however, the tube is placed after the induction of anesthesia, when insertion is less disturbing to the patient and is easier to perform.

Vascular access is placed for patients receiving a general anesthetic. Access is needed to give drugs and fluids before, during, and after surgery. Patients who are dehydrated or are at risk for dehydration may receive fluids before surgery.

A preoperative checklist is completed and signed by the nurse before the patient is transported from the unit to surgery:

- Vital signs are taken and recorded as baseline information and to assess patient status.
- Makeup, nail polish, and one artificial nail (if applicable) are removed to allow assessment of natural color and pulse oximetry for oxygenation status during surgery.
- An identification band is placed on the patient. A hospital gown is given to the patient to wear. Underwear is removed, depending on the type of surgery.
- Removal of hair pins, wigs, and jewelry prevents loss or injury. Rings are taped in place if the patient does not want to take them off, unless the ring is on the operative side (arm or chest surgery), in case edema occurs.
- Dentures, contact lenses, and prostheses are removed to prevent injury.

Some patients are concerned about body image and do not want family members to see them without dentures or makeup. Remove dentures after the family goes to the waiting room and insert them before the family sees the patient postoperatively.

- Antiembolism devices are applied if ordered.
- Patients are asked to void before sedating preoperative medications are given, unless a urinary catheter is present, to prevent injury to the bladder during surgery.
- Glasses and hearing aids go with patients to surgery if they are unable to communicate without them. Label them with the patient's name and document where they go.
- All orders, diagnostic test results, consents, and history and physical (required on the chart) are reviewed for completion and documented on the checklist.



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DO NOT WRITE IN MARGIN

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Please use I.D. label or block print

<b>FIONA STANLEY HOSPITAL</b>		SURNAME		UMRN				
<b>PRE-OPERATIVE CHECK</b>		GIVEN NAMES		DOB	GENDER			
		ADDRESS			POSTCODE			
WARD					TELEPHONE			
DOCTOR								
ALLERGIES / REACTIONS <input type="checkbox"/>			Weight _____ kg	Height _____ cm				
<input type="checkbox"/> latex <input type="checkbox"/> tape <input type="checkbox"/> food <input type="checkbox"/> skin prep <input type="checkbox"/> drug (refer to medication chart)			Temp _____	BP _____				
<div style="border: 1px solid black; padding: 5px; text-align: center; color: red;">ADR label</div>			PR----	RR _____				
			O <sub>2</sub> Sats _____	BSL _____				
			Urinalysis _____					
Preferred Name: _____			Conscious state: <input type="checkbox"/> Alert <input type="checkbox"/> Confused					
Preferred Language: _____			<input type="checkbox"/> Agitated <input type="checkbox"/> Drowsy <input type="checkbox"/> Comatose					
Interpreter required <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Booked								
Communication barriers? specify _____			Micro Alert: <input type="checkbox"/> Yes <input type="checkbox"/> No Type: _____					
<b>PATIENT COMPLIANCE STATEMENT</b> <i>I am aware of the dangers of food or liquid in my/my child's stomach during anaesthesia and certify that I/ they have had nothing to eat or drink since:</i> Date/Time: _____ Patient/Parent (signature): _____ Witness: _____								
<b>TO BE COMPLETED PRIOR TO ANY PRE-MEDICATIONS BEING ADMINISTERED</b>		DSU/Ward Nurse		Holding Bay Nurse		Circulating Nurse		
Identification check: Two identity bands non-operative limb checked		Y	N	Y	N	Y	N	
Surgical Consent Form completed and correct		Y	N	Y	N	Y	N	
Anaesthetic Consent Form completed and correct		Y	N	Y	N	Y	N	
Operative site marked on patient		Y	N	N/A	Y	N	Y	N
Operative site prep / shave checked		Y	N	N/A	Y	N	Y	N
Last time food consumed Time: _____		Y	N	Y	N	Y	N	
Last time fluids consumed Time: _____		Y	N	Y	N	Y	N	
Last voided Time: _____ or Urinary catheter in situ (circle)		Y	N	Y	N	Y	N	
Skin integrity intact? If no, specify: _____ Braden score: _____		Y	N	Y	N	Y	N	
Teeth: Own / Loose / Plate / Caps / Crowns / Bridge (circle)		Y	N	Y	N	Y	N	
Dentures: Upper Full / Partial In situ / ward / home		Y	N	N/A	Y	N	Y	N
Lower Full / Partial In situ / ward / home		Y	N	N/A	Y	N	Y	N
Hearing aids In situ / ward / home		Y	N	N/A	Y	N	Y	N
Glasses with patient / Contact lenses removed (circle)		Y	N	N/A	Y	N	Y	N
Jewellery / Body piercing taped / removed (circle)		Y	N	N/A	Y	N		
Make up / Nail polish / Hairclips removed (circle)		Y	N	N/A	Y	N		
Pre-med given Time: _____		Y	N	Y	N			
Bowel prep: Type: _____ Result: _____		Y	N	N/A	Y	N		
Pre op shower		Y	N	Y	N			
Prosthesis / implant Type: _____ Location: _____		Y	N	N/A	Y	N		
VTE risk Assessment completed TEDS / SCD in situ (circle)		Y	N	Y	N			
Medication chart		Y	N	Y	N			
IV Fluid Treatment chart / Fluid Balance chart		Y	N	Y	N			
Correct ID labels		Y	N	Y	N			
X Rays / Scans with patient		Y	N	N/A	Y	N		
Blood group & hold / cross match / INR (circle)		Y	N	N/A	Y	N		
Pregnancy Status positive / negative (circle)		Y	N	N/A	Y	N		
Any other relevant information:								
Print Name and Designation								
DSU/Ward Nurse				Sign: _____				
Holding Bay Nurse				Sign: _____				
Circulating Nurse				Sign: _____				
Theatre transfer ID Check				Sign: _____				

PRE-OPERATIVE CHECK

MR 606A

## Preoperative medication

Preoperative medications may be ordered at a specific time, usually 1 hour before, or on call to surgery:

Category	Medication	Purpose
Narcotics	morphine sulfate meperidine (Demerol) fentanyl (Sublimaze)	Analgesia Enhancement of postoperative pain relief
Antianxiety and sedative hypnotics	diazepam (Valium) hydroxyzine hydrochloride (Vistaril) lorazepam (Ativan) midazolam (Versed) phenobarbital sodium (Luminal)	Sedation Anxiety reduction
Anticholinergic	atropine sulfate glycopyrrolate (Robinul) scopolamine hydrobromide	Secretion reduction
Antiemetic	droperidol (Inapsine) ondansetron (Zofran) metoclopramide (Reglan) promethazine hydrochloride (Phenergan)	Control nausea and vomiting; may be effective into the postoperative period
Histamine (H <sub>2</sub> ) antagonist	cimetidine (Tagamet) famotidine (Pepcid) ranitidine (Zantac)	Reduction of acidic gastric secretions in case aspiration occurs either silently or with vomiting
Alkalinizing agent	Sodium citrate and citric acid Bicitra	Prevention of an asthmatic attack, pneumonitis, pulmonary edema, or severe hypoxia
Antibiotic	cefazolin (Ancef) cefoxitin (Cefotan) ampicillin (Omnipen)	Prevention of postoperative infection

## **Transfer to the surgery room**

When the surgery department is ready, the patient is taken to the surgical holding area. The patient's chart, inhaler medications for those with asthma, and glasses or hearing aids for those who need them to communicate also go to the surgical area. The patient can be accompanied by family members.

During surgery, the family waits in surgical waiting area, which is a communication center where family is kept informed regarding the patient's status. The physician calls the family there when surgery is over.

After the patient goes to surgery, nurse should prepare the patient's room and necessary equipment so it is ready for the patient's successful return.

## **Review Resources**

1. Nursing interventions and clinical skills. Second edition Elkin, Perry, Potter
2. Med-Surge success. Second edition. Kathryn Cadenhead Colgrove, Ray A. Hargrove-Huttler
3. Nurse Clinical instructor. Donna Sardina RN, MHA, WCC
4. Critical Care Nursing made incredible easy. Fifth edition. David W.Woodroff
5. Comprehensive NCLEX review. Jon Haws, Chance Reaves, Miriam Wahrman
6. Mosby's Textbook for Nursing Assistants. Sorrentino, Remmert.