POST-OPERATIVE CARE

" OR POST-ANESTHETIC CARE"

:Prepared by
Dr: zaineb Alshawesh
ANESTHESIOLOGIST

:Introduction

*The postanesthetic recovery period is a time of high risk for pediatric patients.

A large percentage (20-40%) of otherwise healthy infants* and children develop oxygen desaturation (SpO_2 ≥? 94%) .during transport and upon arrival at the PACU

*All children, therefore, should be given oxygen supplementation during their transport from the operating room and upon arrival at the PACU.

The cause of postoperative hypoxemia is mostly due to*
atelectasis secondary to a reduction in FRC and resultant
.small airway closure under general anesthesia

Upper airway obstruction, postextubation croup, and*
 apnea account for the majority of untoward events

Nearly 50% of all perioperative cardiac arrests caused&
by respiratory problems occurred during the recovery
.period

* Dysrhythmias and hypotension occur less frequently in children than adults but require quick and appropriate treatment when they do occur.

* Nausea, vomiting, temperature instability, and postoperative pain also require prompt and effective treatment to ensure patient comfort and efficient discharge timing.

RECOVERY IN THE POSTANESTHETIC CARE UNIT (PACU)

The PACU should be situated adjacent to the* operating rooms to facilitate rapid and safe patient transport and to allow the anesthesiologist ready .access in case of an emergency

The number of beds depends on hospital size,* caseload, and average length of stay. Each bed :space should have the following

Bedside Equipment and Supplies in PACU

Oxygen, flow meter, humidifier, facemask, and tent
Resuscitation bag with oxygen and anesthesia masks
Oral and nasal airways and lidocaine jelly
Suction apparatus, catheters, and tonsil suction tips
Nasogastric tubes and lubricant
Cups and water for clearing suction catheter
Blood pressure manometer and cuffs
Thermometer
Intravenous fluids, tubing, and three-way and T-connectors
Intravenous catheters, syringes, alcohol, and povidone-iodine (Betadine) wipes
Adhesive tape and tincture of benzoin

Emergency Cart Equipment and Supplies in PACU

Cardiac defibrillator
Two laryngoscope handles and a variety of blades
Endotracheal tubes (2.5- to 7.5-mm inner diameter), stylets, tape, benzoin, and syringes for cuff
Resuscitation bags, oral airways, and bite blocks
Cutdown and tracheostomy sets
Sterile gloves, drapes, gowns, towels, and masks
Intravenous solutions, tubing, catheters, and syringes
Central venous catheter sets
Foley catheter
Bedboard for cardiopulmonary resuscitation

PACU Emergency Cart Medications

α-Adrenergic agonist (phenylephrine)
Aminophylline
Antihypertensives (sodium nitropruside, labetalol)
Atropine
β-Adrenergic blocker (propranolol)
Calcium chloride
Catecholamines (epinephrine, norepinephrine, dopamine, dobutamine, isoproterenol)
Dextrose (50%)
Diuretics (furosemide, mannitol)
Heparin
Lidocaine (intravenous)
Naloxone
Phenytoin (Dilantin)
Racemic epinephrine and nebulizer
Steroids (cortisol, dexamethasone, methylprednisolone)
Succinylcholine

Additional features needed for PACUs are an isolation* room for either infectious or immunosuppressed .patients

*Ready access to portable radiography service and equipment and personnel for measuring blood gas tensions, pH, hemoglobin, and electrolyte analysis is important.

Initial Care

*On arrival at the PACU, the anesthesiologist confirms the patency of the patient's airway,

assesses the adequacy of ventilation, and ensures the supply of humidified oxygen.

*The anesthesiologist records the heart rate, respiratory rate, blood pressure, SpO_2, and temperature, which are reported by the nurse.

*then gives a report to the nurse concerning the child's condition, special problems related to any underlying illnesses, the events of surgery, anesthetic technique, and medications given.

*PACU staff must be competent in recognizing and initiating the treatment of commonly encountered problems, including inadequate ventilation, agitation, pain, vomiting, temperature instability, and delayed awakening.

*Before leaving the PACU, the anesthesiologist writes a summary note in the chart and verifies that suitable postoperative orders have been written or entered into the computer.

Awakening Responses

*With most currently used general anesthetic techniques, awakening occurs within a few minutes of the conclusion of surgery.

*Unfortunately, no one technique guarantees a smooth emergence, and agitation may occur in the early recovery period.

*Agitation may be caused by numerous factors, including emergence delirium from anesthetic agents, especially with a newer inhaled anesthetic with low blood-gas solubility (sevoflurane or desflurane);

*pain; metabolic disturbances (hypothermia, hyperthermia, hypoglycemia, hyponatremia); neurologic disturbances; a behavioral response to sudden awakening in a strange environment; separation anxiety;

airway obstruction with resultant hypoventilation*
.and hypoxia; and combinations of these factors

*Emergence delirium should be avoided with an opioid or benzodiazepine.

Pain can be prevented in these patients by judicious use of analgesics or regional techniques intraoperatively.

Monitoring and maintenance of metabolic* homeostasis are essential aspects of all general .anesthetics

*The detecting of airway obstruction, inadequate ventilation, hypercarbia,

and/or hypoxemia as causes of agitation is very important to discovered and managed.

Delayed and erroneous treatment of these* problems can have serious consequences, .including respiratory and cardiac arrests

*Adequate preoperative preparation for the recovery period & reassurance or the comfort of being touched or held to alleviate anxiety.

Parental presence can help minimize postoperative anxiety in children.

COMMON PROBLEMS IN THE POSTANESTHETIC CARE UNIT

Airway Obstruction :

*Although patients should be able to maintain airway patency before leaving the operating room, it is not uncommon for an infant or a child to have obstruction after the stimulation of extubation and transportation has subsided.

*The anesthesiologist must be acutely aware of any changes in the breathing pattern at this time

because hypoventilation can lead to a reaccumulation of volatile agents in the alveoli that can further blunt the respiratory drive.

*Hypercarbia may result in dysrhythmias and hypertension, and hypoxemia in infants may lead to further suppression of breathing.

*Neck extension, mouth opening, and jaw lift alone or together may be enough to correct the problem.

*Nasopharyngeal airways, if necessary, are better tolerated than oropharyngeal airway in this setting.

*If obstruction continues, reassessment of anesthetic and neuromuscular blockade reversal should be conducted and possible reintubation may be considered.

Apnea of Prematurity:

*Clinically, apnea is defined as cessation of breathing for longer than 15 seconds or for less than 15 seconds associated with bradycardia, cyanosis, or pallor.

*Apnea may be central (no respiratory effort), obstructive (respiratory effort without gas flow), or mixed (both central and obstructive).

*Repetitive pauses of breathing, lasting 5 to 10 seconds and not associated with other changes in infants, are termed periodic breathing.

*These abnormal respiratory patterns, which are observed commonly in neonates and preterm infants, can appear or worsen in preterm infants after exposure to anesthetic agents.

*This is particularly true for prematurely born infants with a previous history of apnea

and those younger than 44 weeks postconceptional age (PCA) after simple surgical procedures such as inguinal herniorrhaphy.

*It had been recommended that former preterm infants less than 44 to 46 weeks PCA should be carefully observed postoperatively for at least 18 to 24 hours .

*It is generally recommended that preterm infants less than 44 to 46 weeks PCA be admitted for monitoring following general anesthesia.

*In published studies of postoperative apnea involving with anemia (hematocrit <30) as a significant risk factor, regardless of gestational age or PCA.

So concluded that older infants with apnea in the PACU and those with anemia should be admitted and monitored overnight.

Obstructive Sleep Apnea :

*chronic obstructive sleep apnea syndrome (OSAS) is a disorder of breathing during sleep

*characterized by prolonged partial upper airway obstruction with or without intermittent complete obstruction

and cessation of airflow that disrupts normal sleep time breathing and normal sleep patterns.

Although OSAS in adults is common among obese* middle-aged men and women, it is commonly associated with enlarged tonsils and adenoids in .children

*Surgical removal of enlarged adenoids and tonsils often markedly improves upper airway patency.

OSAS also occurs in children with a narrowing of* upper airways secondary to craniofacial , abnormalities, muscular dystrophy

cerebral palsy, and Down syndrome (trisomy 21), which may worsen during the postoperative period

Some children with OSAS but without adenotonsillar* hypertrophy may have abnormal neural control of .upper airway muscles

*The risk of postobstructive pulmonary edema is expected to be high in patients with OSAS.

Hypoxemia:

*Supplemental oxygen should be administered to all children on arrival in the PACU.

*Pulmonary gas exchange deteriorates during general anesthesia primarily because of a reduction of FRC and resultant airway closure and atelectasis.

*Infants and children, being even more susceptible to reductions in FRC and to atelectasis, demonstrate frequent (28% to 43%)

and marked oxygen desaturations(SpO_2 ≥?94%, estimated PaO_2 <67 mm Hg) if allowed to breathe room air immediately after general anesthesia.

*Infants, especially those younger than 6 months and those with upper respiratory infection, are at increased risk.

*Humidified oxygen should be delivered by a funnel-shaped facemask (face tent).

*Termination of oxygen therapy is determined by normal and stable pulse oximeter readings at or above preoperative levels with the patient breathing room air.

Postobstructive Pulmonary Edema :

*Pulmonary edema developing shortly after the relief of upper airway obstruction is known as postobstructive pulmonary edema (POPE).

*POPE was first described in 1977 following difficult intubation in children(Travis et al., 1977).

Subsequently, POPE was described following the relief of laryngospasm both in infants and children .

*The first sign of POPE may occur immediately after the relief of upper airway obstruction.

*They are characterized by rales, wheezing, and hemoglobin desaturation with the appearance of copious, frothy, pink (pulmonary edema) fluid pouring out of the trachea.

*patients with acute or chronic upper airway obstruction are more vulnerable to POPE.

Like,subglottic croup, acute supraglottitis, OSAS, laryngomalacia, tracheomalacia, craniofacial dysmorphology and soft tissue obstruction of different etiologies.

*Among a number of factors associated with the development of pulmonary edema, increased interstitial negative pressure by forced inspiratory effort against the closed glottis (Mueller maneuver)

and altered capillary permeability, due to acute hypoxia, may be the likely causative factors of POPE.

*Once upper airway obstruction is cleared, the patient with POPE should receive CPAP by mask (5 to 10 cm H_2O) with a high concentration of oxygen with an air mix to maintain oxygen saturation by pulse oximeter.

*Diuretics should be considered along with intravenous fluid restriction.

*If hypoxemia (SpO_2 <95%) persists the patient may require ET intubation and ventilation with a moderate PEEP (10 cm H_2O) under sedation,

often with morphine or other opioids, until pulmonary edema is dissolved.

Postintubation Croup:

*The incidence of postintubation croup was reported to be about 1%.

*The most common cause is a tight-fitting ET tube without an air leak at 30 to 40 cm H_2O with positive airway pressure.

*Patients less than 4 years of age seem to be more susceptible to croup, probably because of their small laryngeal lumen, which is more readily obstructed with mucosal edema.

*Other factors associated with postintubation croup may include traumatic or repeated intubation, “bucking” or coughing with the ET tube in place,

*changing the head position, duration of surgery, and neck surgery.

*An increased incidence is also seen in children with trisomy 21.

* other factors include, the use of analgesic jelly for lubricating the ET tube, insufficient intraoperative anesthetic gas humidification, and the presence of upper respiratory infection.

The incidence of postintubation croup seems to have* decreased with or without a leak around the ET tube at .or above 20 to 25 cm H_2O positive airway pressure

*the trend of using the cuffed ET tube in infants and young children would theoretically reduce the incidence of postintubation croup,

by choosing an ET tube that is one to two sizes (0.5 to 1.0 mm OD) smaller to accommodate the cuff and thereby avoid having the ET tube tightly fitting the subglottis.

decreasing attempts for reintubation due to a tube that* is either too tight or too small in diameter (with .excessive gas leakage around the tube)

*The croup scoring system by Downs and Raphaely (1975) objectively quantifies the severity of the condition and its use can be helpful in treatment decisions (Table)

*Cool humidified mist administered after extubation may be helpful in mild cases of croup.

Racemic epinephrine (0.5 Ml? of 2.25% solution),* diluted in 3 to 5 mL of normal saline solution and administered by nebulizer for 5 to 10 minutes, assists .patients with progressively worsening symptoms

by producing mucosal vasoconstriction, resulting in a shrinking of swollen airway mucosa.

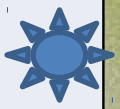
The “rebound effect” and reoccurrence of symptoms* are well described and necessitate observing the .patient up to 4 hours after treatment

*The efficacy of corticosteroids on postintubation croup has been controversial.

Croup score:

	SCORE			
Criteria	***0***	***1***	***2***	***3***
Stridor	**None**	**Only with agitation**	**Mild at rest**	**Severe at rest**
Retractions	**None**	**Mild**	**Moderate**	**Severe**
Air entry		**Mild decrease**	**Moderate decrease**	**Severe decrease**
Color		**N/A**	**N/A**	**Cyanotic**
Level of consciousness		**Restless when disturbed**	**Restless when undisturbed**	**Lethargic**

Total Score	Degree	Management
≤4	Mild	Outpatient; given mist therapy
5 to 6	Mild to moderate	Outpatient if child improves in emergency room after mist, is greater than 6 months old, and has a reliable family
7 to 8	Moderate	Admitted; given racemic epinephrine
>8	Severe	Admitted; given racemic epinephrine, oxygen, and intensive care therapy



:Cardiovascular Instability

*Cardiac rhythm disturbances and blood pressure fluctuations tend to be less problematic in infants and children recovering from general anesthesia than in adults.

*Bradycardia is typically a response to medications such as neuromuscular blockade reversing agents or fentanyl,

or a normal variant that should be treated only if associated with hypotension.

Tachycardia may be secondary to hypovolemia,* inadequately treated pain, or anticholinergic .medications

So, Careful assessment and appropriate therapy should be instituted to correct volume deficit or the need for analgesia.

*Hypertension may also reflect inadequate analgesia, an anticholinergic effect, or excessive hydration,

or it may be an artifact caused by the use of an .inappropriately small blood pressure cuff

*Hypotension is more unusual and is most often caused by hypovolemia secondary to inadequate fluid replacement or ongoing blood loss.

And, Appropriate fluid resuscitation should be instituted.

Nausea and Vomiting :

*Postoperative nausea and vomiting (PONV) is a relatively frequent and a major cause of delayed discharge from the PACU or unscheduled admission for same-day or outpatient surgery patients.

*Although rarely life threatening in the PACU, vomiting has the potential for causing aspiration, hypovolemia, and/or hypernatremia.

*The average incidence of postoperative vomiting in children above 3 years of age has been reported to be 40% or greater.

*The risk of PONV is higher after certain types of surgery, such as strabismus repair, adenotonsillectomy, and orchiopexy.
Other factors affecting the incidence of nausea and vomiting can include age, gender, history of motion sickness,

anesthetic techniques (inhaled anesthetics, nitrous oxide versus intravenous anesthetic with propofol), inadequate analgesia, gastric distention, and the skill of the anesthesiologist.

*Intraoperative use of opioids without antiemetics may also precipitate postoperative vomiting.

What are **Contribution of Postoperative Oral Intake to Postoperative Nausea and Vomiting ??**

*For PONV prophylaxis, intravenous serotonin ($5\text{-}HT_3$) receptor antagonist, such as ondansetron (0.1 to 0.15 mg/kg) and granisetron (0.04 mg/kg)

Are there oral ondansetron ??

given intraoperatively 30 minutes before the emergence, has been shown to be highly effective in preventing PONV with rare side effects.

*A small dose of dexamethasone (0.2 to 0.5 mg/kg), with or without ondansetron, is also effective.

*For those patients for whom prophylaxis fails, antiemetic drugs that work via other mechanisms,

such as dexamethasone (0.5 mg/kg), diphenhydramine (0.5 mg/kg), or perphenazine (70 mcg/kg) are suggested.

Table 63-1. Receptor Site Affinity of Antiemetic Drugs

PHARMACOLOGICAL GROUP DRUG	DOPAMINE	MUSCARINIC CHOLINERGIC	HISTAMINE	SEROTONIN
PHENOTHIAZINES				
Chlorpromazine	++++	++	++++	+
Prochlorperazine	+++	+	++++	+
BUTYROPHENONES				
Droperidol	+++	—	+	+
Haloperidol	+++	—	+	—
ANTIHISTAMINES				
Promethazine	++	+++	++++	—
Diphenhydramine	+	++	++++	—
BENZAMIDES				
Metoclopramide	++	—	+	++
ANTICHOLINERGICS				
Scopolamine	+	++++	+	—
ANTISEROTONIN				
Ondansetron	—	—	—	++++

From Altman DF. Drugs used in gastrointestinal diseases. In Katzung BG, ed. *Basic and Clinical Pharmacology*. New York, NY: Lange Medical Books/McGraw-Hill; 2001. Reprinted with permission by The McGraw-Hill Companies, Inc.

Table 63-2. Dosage Guidance for Commonly Used Antiemetics

PHARMACOLOGICAL GROUP (GENERIC)	BRAND NAME	DOSAGE (mg/kg)	ADVERSE EFFECTS
PHENOTHIAZINES			
Chlorpromazine Prochlorperazine	Thorazine Compazine	IV, PO: 0.5-1.0 every 6-8 hr PO, PR: 0.1 every 6-8 hr (maximum dose 10 mg)	Drowsiness, hypotension, arrhythmias, extrapyramidal symptoms; potentiates effects of opioids, sedatives
BUTYROPHENONES			
Droperidol Haloperidol	Inapsine Haldol	IV: 0.01-0.03 every 6-8 hr IV: 0.01 every 8-12 hr	Drowsiness, hypotension, arrhythmias; droperidol has black box warning: prolongs QT interval, extrapyramidal symptoms; lowers seizure threshold; potentiates effects of opioids, sedatives
ANTIHISTAMINES			
Promethazine Diphenhydramine	Phenergan Benadryl	IV: 0.25-0.5 every 6 hr 0.5-1.0 every 4-6 hr (maximum dose 50 mg)	Drowsiness, hypotension, arrhythmias; contraindicated in patients taking MAO inhibitors; Phenergan contraindicated in children <2 years old because of cases of fatal respiratory depression*

BENZAMIDES			
Metoclopramide	Reglan	V, PO: 0.05-0.1 every 6 hr	Adverse effects include extrapyramidal symptoms
ANTICHOLINERGIC			
Scopolamine	Hyoscine transdermal scopolamine	V, PO: 0.005 every 4-6 hr apply behind ear 4 hr before needed; lasts 72 hr	Adverse effects include dry mouth, blurred vision, fever, tachycardia, constipation, urinary retention, drowsiness, amnesia
ANTISEROTONIN			
Ondansetron	Zofran, Zofran ODT	V, PO: 0.15 every 8 hr, (maximum dose 4 mg)	Adverse effects include bronchospasm, tachycardia, headaches, lightheadedness, may prolong QT interval

MAO, Monoamine oxidase; *ODT*, oral dissolving tablet.

[a]FDA MedWatch, www.fda.gov/medWatch/SAFETY/2005/safety05.htm#phenergan (accessed 4/19/2007).

Temperature Instability:

*Even with the most careful attention to maintaining normothermia, patients frequently arrive in the PACU with lowered body temperature (hypothermia).

*Usually covering the patient with warm blankets is sufficient, but radiant warming lamps and conductive warming blankets should be used in extreme cases.

Hyperthermia that develops in the PACU may indicate* the onset of an infectious process and should be .watched closely

*Malignant hyperthermia may be seen initially during the postanesthetic period.

*If malignant hyperthermia is suspected, appropriate investigation and therapy should be instituted without delay.

Table 63-3. Common Causes of Postoperative Fever

SITE	ETIOLOGY	TIME	INCIDENCE	SIGN SYMPTOMS	DIAGNOSIS	THERAPY
Wind (lungs)	Atelectasis	24-48 hr	Very common	Cough, shortness of breath, retractions	Examination, chest x-ray	Cough, deep breathing, incentive spirometer
Wound (operative site)	Infection	<24 hr-7 days	Rare	Pain, erythema, induration	Examination wound cultures	Antibiotics, open wound
Water (urinary tract)	Urinary tract infection	3-5 days	Very rare	Dysuria, hematuria	Examination urinalysis, culture	Remove indwelling catheter, antibiotics
Walker (legs)	Deep-vein thrombosis	>3 days	Extremely rare	Swelling, heaviness of lower extremities, superficial venous congestion, palpable cord	Examination, duplex Doppler, venogram	Bed rest, elevation, heparin (Coumadin), thrombolytics

Pain and Discomfort and Management :

*The intraoperative use of opioids and regional anesthesia for preventing postoperative pain has been discussed. Even with the best planning, patients may still experience pain in the PACU.

*Although most pain and discomfort originate from surgical incision and tissue irritation,

*other causes, including tight bandages or casts, distended bladders, and corneal abrasions, should not be overlooked.

*Foley catheters and nasogastric tubes may also be causes for distress.

*Preoperatively, patients should be prepared to expect these catheters, which will reduce anxiety during recovery.

Treatment of pain in the PACU depends on the* patient's medical condition, the surgical procedure, .and discharge disposition

*Oral acetaminophen (10 to 15 mg/kg) is useful in patients without intravenous access who have had minor surgical procedures.

*Rectal acetaminophen (30 to 40 mg/kg) may take up to 2 hours to achieve a therapeutic level and so is not effective for treating acute pain in the PACU.

NSAIDs can play an important role in pain* management for patients with compromised airways and respiratory function and can serve as adjuncts to .opioid

*Morphine (0.025 to 0.05 mg/kg) or fentanyl (0.5 to 1.0 mcg/kg), given in incremental doses, can be used to achieve an analgesic state in patients recovering from a general anesthetic.

In younger children and infants, nurse-assisted PCA is a* useful alternative & It is most effective if patients are .selected, evaluated, and instructed before surgery

*Side effects of opioid use, including nausea, vomiting, pruritus, and urinary retention, should be anticipated and treated when they occur.

Box 54-1 Analgesic Ladder for Managing Acute Pain

MILD PAIN

NSAIDs, acetaminophen, or salicylates

MODERATE PAIN

1. NSAIDs or acetaminophen with weak opioid (oxycodone, hydrocodone, codeine)
2. Intravenous opioids (with addition of fixed-interval NSAID or acetaminophen)
a. Intravenous opioid by PCA
b. Continuous infusion of opioid with as-needed rescue does of opioid
c. Fixed, interval dosing of opioid
3. Regional anesthetic techniques

SEVERE PAIN

1. Continue fixed interval dosing of NSAID or acetaminophen
2. Intravenous opioid by PCA
3. Regional anesthetic techniques

NSAID, Nonsteroidal anti-inflammatory drug; *PCA*, patient-controlled analgesia.

DISCHARGE FROM THE POSTANESTHETIC CARE UNIT:

*We have two scores that can be helpful as guidelines in determining when a patient is ready for discharge.

*The Modified Aldrete Score (Soliman et al., 1988) (Table) examines the following five criteria: motor activity, respiration, blood pressure, consciousness, and color.

*

The Simplified Postanesthetic Recovery Score (Steward, 1975) assesses three criteria: consciousness, airway, and movement.

*Before a child can be safely discharged from the PACU, a careful examination should be conducted to ensure safety for the patients.

. The following criteria must be met:

1.	**The child is fully awake or easily aroused when called.**
2.	**The airway is maintained and protective reflexes are present.**
3.	**Oxygen saturation is maintained above 95% on room air or stable at the preoperative level with or without oxygen.**
4.	**Hypothermia is absent, and hyperthermia is controlled.**
5.	**Pain and nausea/vomiting are controlled.**
6.	**There is no active bleeding.**
7.	**Vital signs are stable.**

TABLE 11-8 -- The Aldrete score

Able to move 4 extremities voluntarily or on command	2	Activity
Able to move 2 extremities voluntarily or on command	1	
Unable to move extremities voluntarily or on command	0	
Able to breathe deeply and cough freely	2	Respiration
Dyspnea or limited breathing	1	
Apneic	0	
BP ± 20% of preanesthetic level	2	

BP ± 20–49% of preanesthetic level	1	
BP ± 50% of preanesthetic level	0	Circulation
Fully awake	2	
Arousable on calling	1	Consciousness
Not responding	0	
Able to maintain O_2 saturation > 92% on room air	2	
Needs O_2 inhalation to maintain O_2 saturation >90%	1	
O_2 saturation < 90% even with O_2 supplement	0	O_2 Saturation

*From the PACU, patients can be admitted to a short-stay recovery unit or to a hospital ward.

*anesthesiologist is responsible for the follow-up, to ensure that no anesthetic complications occur and to continue treatment for those patients receiving special pain management techniques.

*Postanesthetic notes should be written in the patient's chart to communicate any findings or suggestions that may assist in the patient's recovery.

SHORT-STAY RECOVERY UNIT

*Patients undergoing outpatient procedures continue to recover in an ambulatory or a short-stay recovery unit (SSRU).

*Complications seen in the PACU can also occur here. The most frequent causes for unplanned hospital admission from the SSRU are vomiting, croup, fever,…

*Patel and Rice (1991) set forth the following criteria for discharge to home:

Vital signs are stable.
Intact gag reflex, swallowing, and cough allow for oral intake.
Ambulation or movements are appropriate for developmental level. (Patients who received regional analgesia must demonstrate returning motor function.)
Nausea and vomiting should be minimal, allowing for retaining of ingested fluids.

No signs of respiratory distress such as stridor retractions, nasal flaring, “barking” cough, wheezing, cyanosis, or dyspnea.
Patient is oriented to person, place, and time as appropriate for age.

.

- **EMERGENCE PHENOMENA AFTER GENERAL ANESTHESIA : abnormal reflexes , sleep disturbances,** *emergence delirium* (mentioned before),

  - **post op urinary retention**