Pediatric PACU Nursing: Are you competent?
By Allan J. Cresencia, MSN, RN, CPN
Clinical Research Nurse I
Anesthesiology Critical Care Medicine
Objectives

• 1. Identify and discuss the basics of pediatric PACU nursing using the acronym “PEDS-PACU.”

• 2. Analyze and discuss pediatric specific case scenarios and/or case studies.

• 3. Answer and discuss pediatric specific questions regarding perioperative nursing.
Conflict of Interest

• Nada, zero, zip, ny2et, none, zilch, nay, nunca, nullibiquitous, nary, nonexistant, squat, null, nil, nope, no-way, nichts, unequivably absent, nowise, jack, I wish, if only, yeah-right, nitching, fuggit-a-bout-it, in your dreams, yeah right!!!

• Thank you ASPAN for the wonderful opportunity of sharing my professional experiences in clinical practice and academia!!!

• Still nothing to declare!!!
Facts about CHLA

• Level 1 Pediatric Trauma in L.A. county
• Magnet designated
• Ranked #10 overall
• Specialists – 650 medical staff
• USC affiliated
• 365 licensed bed
• Expanding more!!

• Main OR
  – 14 O.R.
  – 1 Procedure room
  – 22 PACU beds (2 iso.)

• ASC
  – 3 O.R.
  – 1 Procedure room
  – 6 Phase I PACU bed
  – 3 Phase III PACU bed
Main Operating Room

• O.R. 1 - Peds Surgery
• O.R. 2 - Dental
• O.R. 3 - Urology
• O.R. 4 - Orthopedics
• O.R. 5 - Ophthalmol.
• O.R. 6 - Otolaryngo.
• O.R. 7 - Neuro.
• O.R. 8 - Orthopedics

• O.R. 9 - Orthopedics
• O.R. 10 - Plastics
• O.R. 11 - Cardiac
• O.R. 12 - Urology
• O.R. 13 - Cardiac
• O.R. 14 - Peds Surgery
• O.R. 15 - Procedure room
Stats about Perioperative Service of CHLA

- January to December of 2014
  - ASC did 5,166 surgeries
  - Main O.R. did 10,900 surgeries
  - Total of 16,066 surgeries

- First Quarter of 2015 (January to March)
  - ASC did 1,324 surgeries so far
  - Main O.R. did 2,629 surgeries so far
  - Total of 3,953 surgeries so far
Competency and Cross Training

• Competency
  – Novice
  – Advanced Beginner
  – Competent
  – Proficient
  – Expert

• Cross Training
  – Department specific
  – With actual hands-on experience
  – Who verifies?
  – Who “governs”? 
“PEDS-PACU”

- Parents and Pain
- Extubation
- Drugs
- Surgical Site
- Play
- Anticipate
- Coordinate
- Understand
“P” for Parents and Pain

• Parents
  – Mood - level of anxiety
  – Education - level of understanding
  – Type(s) - Intact, Divorced/Separated, Blended

• Pain
  – Is it under control?
  – Is there a prescription/order?
  – Is it real pain or “parental pain?” - it’s TRUE!!!
“E” for Extubation

Uneventful

• Good
• Prepare for D/C to inpatient floor or home

Eventful

• What type?
  – Laryngo
  – Brocnho
  – Croup
“E” for Extubation

• Artificial Airway
  – Oral
  – Nasal

• Immediate Action for Laryngospasm or Bronchospasm
  – Positive pressure ventilation
  – Muscle relaxants
“D” is for Drugs

• 1.) Do you know pediatric dosing and calculation?
• 2.) Are you comfortable (competent) with giving meds to pediatric patients
• 3.) What are your concerns? (and some fears-right?)
“D” is for Drugs

- Pediatric dosing and calculation
  - In PEDS, weight is in kilograms (kg) not pounds
  - In PEDS, meds are calculated based on weight in kg: (kg x dose or dosing/kg)

- Competency
  - To dilute or not to dilute?
  - How fast or slow do you push the drug?
  - Do you really know what your administering?

- Concerns
  - Too much or little of a dose?
  - The question of “opioid addiction?”
  - Am I doing this correctly?
Pediatric Drug Dosing we use at PACU

• Analgesic
  – Morphine - 0.05mg/kg IV, Q15MIN, PRN for 5 doses, or 0.025 - 0.1 mg/kg/dose. Max dose of 4 mg and max x 5 doses.
  – Hydromorphone - 0.005 mg/kg IV Q15MIN, PRN for 5 doses or 0.005 - 0.02 mg/kg/dose. Max single dose 2mg and max x 5 doses.
  – Ketoralac - 0.5 mg/kg IV, one time only, max dose of 30 mg.
  – Acetaminophen - PO: 15 mg/kg one time only, max single dose 40mg/kg; PR: 25 mg/kg one time only, max single dose of 45 mg/kg; IV: 15 mg/kg one time only, max single dose of 1000 mg.

• Shivering/Tremors
  – Meperidine - 0.25 mg/kg IV one time only, max single dose of 100mg
Pediatric Drug Dosing we use at PACU

• Sedatives
  – Midazolam - 0.05 mg/kg IV one time only, max single dose of 2 mg;
  – Midazolam - 0.5 mg/kg PO one time only, max single dose of 20 mg;
  – Diphenhydramine - 0.5 mg/kg IV one time only, max dose of 50 mg.

• Anti-emetics
  – Ondansetron - 0.075 mg/kg IV one time only, max single dose of 4 mg.
  – Dexamethasone - 0.5 mg/kg IV one time only, max single dose of 4 mg.
  – Metoclopramide - 0.15 mg/kg IV one time only, max single dose of 10 mg.

• Reversal agents
  – Naloxone - 0.005 mg/kg IV one time only PRN resp. depression; max single dose of 2 mg
  – Flumazenil - 0.01 mg/kg IV one time only, max single dose of 0.2 mg.
“S” is for Surgical Site

• Size matters
• Location
• “Gizmos”
• Dressing
• Site matters
• The probability of play versus annoy
“P” is for Play

• Onlooker
• Solitary
• Parallel
• Associative
• Cooperative
“A” is for Anticipate

- Going home
  - Instructions
  - Prescriptions
  - Are they ready?

- Going to floor
  - Meds reconciliation
  - Is pain controlled?
  - Intake and output
Discharge Instructions

• Computer Generated
  – Care sets based on specialty
  – Good
    • Standardized
    • No deviation
  – Bad
    • Not catered to an individual
    • Does not communicate

• Handwritten
  – Minimal orders
  – Deciphering MD handwriting
  – “Just not enough”
“C” is for Coordinate

- Very similar to “anticipate” with multiple players involved
- Here’s an example case:
  - A 16 years old male, football player that twisted his left knee during practice game;
  - To O.R. for left knee arthroscopy - procedure uneventful
  - Came to PACU with left knee immobilizer and a “soft” left ankle cast
  - Orthopods ordered crutch training in PACU with No WBLLE
  - Upon awakening in PACU, young man screaming in pain and using profanity with screaming episodes
  - Scheduled for AM admission but hospital is full and no more beds; orthopods changed their minds from AM admission to D/C home
  - This is your first patient in PACU and there’s more to come!!!
“U” is for Understand

• Understand that all your efforts in processing a patient in PACU can be good and futile - to say the least.

• Why?
“U” is for Understand

• Good effort
  – You know the feeling!
  – Parents are listening and following instructions
  – Patient is comfortable and ready for D/C
  – Everything is aligning in your favor!!

• Futile
  – The opposite of Good!
  – Culprits are as follows:
    • Parents versus the patient
    • Pain control or Parental Pain perception
    • Issues and concerns arises
    • No pt throughput
Case Study #1: The case of Baby Mickey

- 9 months old baby boy for cleft lip and palate repair
- Uneventful plastic surgery operation per surgeon
- BUT upon Extubation, periods of desaturations within minutes apart
- In PACU:
  - @ 10:37 - Upon admission, marked diff. breathing with noted retractions but not nasal flaring yet!
  - @ 10:42 - Anesthesia ordered Albuterol breathing treatment via nebulizer with temporary relief quickly went back to resp. distress
  - @ 10:52 - Nasal flaring and severe resp. distress noted with saturations going down to low 80’s; and baby’s position is arched (reverse C); this time Anesthesia ordered Racemic Epinephrine via nebulizer.
Question #1

- What is happening to Baby Mickey in PACU after his repair of cleft lip and palate?
  - A.) Respiratory distress
  - B.) Bleeding
  - C.) Airway obstruction
  - D.) Irritability, Agitation & Excitability
Question #2

• Did the racemic epinephrine really helped the situation (knowing what you know now) or did it make the situation worse?

  – A.) Yes
  – B.) No
  – C.) Maybe
  – D.) It wouldn’t have matter
Case Study #2: Minnie’s Case

- A 3 years old girl who came in for her routine eye exam under general anesthesia for Retinoblastoma monthly surveillance
- Unremarkable eye examination per Ophthalmologist
- Uneventful Extubation per anesthesia team, to ASC PACU with O2 via facemask
- Upon arrival to ASC PACU: Pulse Oximetry reading at 72% and going down, dusky gray face with no chest movement
- To make things more exciting: face mask used to induce was left in the O.R. and anesthesia resident did not bring any rescue drugs at bedside
- So, what is happening here in this scenario besides “chaos?”
Question #3

In managing pediatric laryngospasm or bronchospasm, which is the most appropriate bag that will deliver immediate positive pressure ventilation?

- A.) Pediatric ambu-bag
- B.) Jackson-Reese ambu-bag
- C.) CPAP machine
- D.) Ventilator machine
Question #4

- If positive pressure ventilation did not “break” the laryngospasm, which immediate action(s) are necessary to ventilate the child? Select all that apply.

  - A.) Give oxygen
  - B.) Give IV muscle relaxant
  - C.) Intubate
  - D.) Manual ambu-bag after intubation
  - E.) Give sedation
Case Study #3: Elsa’s Struggle

- A 7 years old girl with severe OSA, for T & A surgery
- Unremarkable family history; uneventful surgery per surgeon
- Uneventful extubation but extubated “deep” per anesthesia team with nasal artificial airway located in the right nare
- In PACU, uneventful admission and remains “deep” and somnolent
- Mother insisted to be at bedside prior to child waking up, and RN instructed parents not to touch the child until she wakes up on her own
- And so, both parents decided to give the sleeping child kisses on each side of the face
- Guess what happened to the sleeping child?
Question #5: Just for FUN for everyone!!!

• Why do parents ignore the nurse’s instructions to leave their child alone while asleep in PACU? (We know it is your child, and believe us, we don’t want another child!!)

• In pediatric nursing: we only have one rule: Never ever wake up a sleeping child for any reason, why? Go try it and see for yourself.
Question #6

• True or False

– Emergence delirium is a multi-factorial phenomenon.
Question #7

What are some of the medications used to alleviate emergence delirium? Select all that apply.

- A.) Midazolam
- B.) Morphine Sulfate
- C.) Lorazepam
- D.) Diazepam
- E.) Diprivan
- F.) Romazicon
Case Study #4: Anna’s Predicament

- A 12 years old girl with history of Cardiac Surgery (S/P Fontan) came to PACU after Catheterization and Angiography under general anesthesia: procedure done - balloon angioplasty of RPA and LPA with cath. Sites: left groin - venous, right groin - arterial and right IJ
- Upon admission in PACU, nauseated but no vomiting and hydrated with IVF of LR; VS/S and watching TV, needs to stay supine for at least 4-6 hours post cath.
- 30 minutes into PACU recovery, vomiting and suddenly sat up quickly to avoid swallowing vomit
- Now what? Yes, we are in a “bad” situation!!!
Case Study #4: Anna’s Predicament

• Situation: She vomited and doesn’t want to lay down flat (supine) but now her right groin is bleeding due to her sudden sitting up motion.

• What should you do as the bedside nurse? Clean the vomit and stop the bleeding or stop the bleeding and let the vomit sit?
Question #8

What are some factors that precludes Anna to a higher incidence of PONV and bleeding? Select all that apply.

- A.) Age
- B.) Sex
- C.) Type of anesthesia
- D.) Type of procedure
- E.) Behavior/attitude
- F.) Family history
- G.) Weight of patient
Case Study #5: Donald’s Dilemma

- A 7 years old boy S/P CRPP of left humerus with 2 pins; long arm cast from a skateboarding accident
- Uneventful surgical operation per surgeon - “textbook” case
- Unremarkable extubation per anesthesia team.
- In PACU, stable and sleeping for a good 45 minutes and then orthopods came at bedside to wake child up to do neurovascular check and at that point, the GAME IS OVER!!!
- What happened next? Child woke up crying, upset, irritable and “cussing;” Parents were “stunned” of what was happening in front of them and of course, the orthopods decided not to do his neurovascular check and will come back later when child is quiet.
- Now, what do we have here?
Question #9

• In a situation where pain and emergence delirium are both a possibility, which medications should be given to help alleviate the symptoms? Number the medications by order of administration.

- _____ Midazolam
- _____ Morphine Sulfate
- _____ Romazicon
- _____ Diprivan
Question #10

• What really scares you the most about pediatric patients?
  – A.) Crying
  – B.) Parents
  – C.) A & B
  – D.) Don’t really like PEDS
  – E.) Don’t really care for PEDS patients.
References:


References:


Any Questions???

- acresencia@chla.usc.edu
- allancresencia@gmail.com
- Acresencia@g.ucla.edu

- Thank you for listening!!