Appendicitis/Appendectomy

UNFOLDING Reasoning

John Washington, 14 years old

Primary Concept		
Inflammation		
Interrelated Concepts (In order of emphasis)		
x Pain x Stress x Clinical Judgment x Patient Education x Communication		
NCLEX Client Need Categories	**Percentage of Items from Each Category/Subcategory**	**Covered in Case Study**
Safe and Effective Care Environment		
9 Management of Care	17-23%	9
9 Safety and Infection Control	9-15%	
Health Promotion and Maintenance	6-12%	9
Psychosocial Integrity	6-12%	9
Physiological Integrity		
9 Basic Care and Comfort	6-12%	9
9 Pharmacological and Parenteral Therapies	12-18%	9
9 Reduction of Risk Potential	9-15%	9
9 Physiological Adaptation	11-17%	9

History of Present Problem:

John Washington is a healthy 14-year-old African American male who weighs 150 lbs. (68.2 kg). He came to the emergency department because he woke up this morning at about 2 am with "excruciating" generalized abdominal pain around his belly button that has been progressively getting worse over the past several hours. It is now 2 pm. He took ibuprofen 400 mg PO this morning, which decreased the pain some but is now more painful and uncomfortable. The pain is now localized to his RLQ. The pain increases with walking and movement but he feels better when he lies down in a fetal position. He vomited three times after he drank some orange juice for breakfast this morning and has had nothing to drink since. He continues to feel nauseated but has not had an emesis since this morning.

Personal/Social History:

John lives with his mother and three younger brothers. He is active in athletics and has a strong social network of friends and family in the inner-city neighborhood where he lives.

What data from the histories are RELEVANT and must be interpreted as clinically significant by the nurse?
(Reduction of Risk Potential)

RELEVANT Data from Present Problem:	**Clinical Significance:**
• Patient is 14yo • Presents with excruciating generalized abdominal pain around belly button • Current localized pain to RLQ • Nausea/Vomiting • Decreased pain when in fetal position • Increased pain on exertion	• RLQ points to appendicitis – appendicitis is commonly seen in a patient range that includes his age • Progressing pain could indicate occlusion which could lead to inflammation following pain • Fetal position relieves the pressure • Exertion increases pressure/pain • Nausea and vomiting can be a result from the built up bacteria that comes along with appendicitis.
RELEVANT Data from Social History:	**Clinical Significance:**
• Minor • Athlete • Strong group of family and friends .	• Since he is a minor, will need a parent to consent for him • Must put family and friends into consideration on how they will be impacted with brother undergoing surgery • He is young and may not understand how to cope appropriately.

Patient Care Begins:

Current VS:	P-Q-R-S-T Pain Assessment:	
T: 100.5 F/38.1 C (oral)	**P**rovoking/Palliative:	Movement, palpation
P: 106 **(**regular)	**Q**uality:	Sharp, cramping
R: 20 (regular)	**R**egion/Radiation:	Mid abdomen, RLQ
BP: 142/76	**S**everity:	8/10
O2 sat: 99% RA	**T**iming:	Continuous

What VS data are RELEVANT and must be interpreted as clinically significant by the nurse?
(Reduction of Risk Potential/Health Promotion and Maintenance)

RELEVANT VS Data:	Clinical Significance:
• Fever • Tachycardia • Pain 8/10 • BP 146/76 • Continuous, sharp pain	• Fever can indicate infection • Pain can indicate present inflammation • Elevated vitals could be a sign of a bacterial infection or rupture of the appendix

Initial Assessment by Primary Nurse

What body system(s) will the nurse most thoroughly assess based on the problem and the clinical data collected to this point? *(Reduction of Risk Potential/Physiologic Adaptation)*

PRIORITY Body System(s):	PRIORITY Nursing Assessments:
• GI	• Vitals • Bowel sounds • Last BM and characteristics of it • Appetite • Complete abdominal assessment • S/S of ruptured organ • Do all appendix testing (ex: McBurney point and Rovsings sign) • Check skin turgor for hydration status

Current Assessment:	
GENERAL SURVEY:	Alert, oriented, pleasant, appears tense, uncomfortable, dress appropriate for the season, hygiene and grooming normal for age and gender.
NEUROLOGICAL:	Alert & oriented to person, place, time, and situation (x4)
HEENT:	Head normocephalic with symmetry of all facial features. PERRLA, sclera white bilaterally,

	conjunctival sac pink bilaterally. Lips, tongue, and oral mucosa pink and moist.
RESPIRATORY:	Breath sounds clear with equal aeration on inspiration and expiration in all lobes anteriorly, posteriorly, and laterally, nonlabored respiratory effort on room air.
CARDIAC:	Pink, warm & dry, no edema, heart sounds regular, pulses strong, equal with palpation at radial/ pedal/post-tibial landmarks, brisk cap refill. Heart tones audible and regular, S1 and S2 noted over A-P-T-M cardiac landmarks with no abnormal beats or murmurs.
ABDOMEN:	Abdomen round, rebound tenderness in RLQ to gentle palpation. Rebound tenderness present in RLQ, BS + in all four quadrants, bowel sounds diminished/hypoactive
GU:	Voiding without difficulty, urine clear/dark amber
INTEGUMENTARY:	Skin warm, dry, intact, normal color for ethnicity. Cap refill <3 seconds. Hair soft-distribution normal for age and gender. Skin integrity intact, skin turgor elastic, no tenting present.

What assessment data is RELEVANT and must be interpreted as clinically significant by the nurse? *(Reduction of Risk Potential/Health Promotion & Maintenance)*

RELEVANT Assessment Data:	**Clinical Significance:**
• Hypoactive bowel sounds • Tense • Rebound tenderness present in RLQ	• Rebound tenderness is a sign of appendicitis in a nursing assessment. • Being tense could be in relation to being in pain • Hypoactive bowel sounds could be related to the vomiting

Radiology Reports:

What diagnostic results are RELEVANT and must be interpreted as clinically significant by the nurse?
(Reduction of Risk Potential/Physiologic Adaptation)

Ultrasound: Abdomen	
Results:	Clinical Significance:
Enlarged, non-compressible appendix	This could be a result of inflammation cause massive pressure which could be indicative of an impending rupture.

Lab Results:

Complete Blood Count (CBC)					
	WBC	HGB	PLTs	% Neuts	Bands
Current:	14.5	15.2	245	88	0

What lab results are RELEVANT and must be recognized as clinically significant by the nurse?
(Reduction of Risk Potential/Physiologic Adaptation)

RELEVANT Lab(s):	**Clinical Significance:**
WBC Neutrophils	WBC are elevated and can indicate infection or inflammation Neutrophils are elevate attempting to rid the body of any infection

Basic Metabolic Panel (BMP)					
	Na	K	Gluc.	Creat.	
Current:	133	3.5	95	0.9	

What lab results are RELEVANT and must be recognized as clinically significant by the nurse? *(Reduction of Risk Potential/Physiologic Adaptation)*

RELEVANT Lab(s):	Clinical Significance:
Na K	Sodium is lowered due to the patient hydration status – Patient has been vomiting and not eating or drinking since the am. Potassium OK at this time but should be monitored again because of the patient's hydration status. Electrolytes could quickly become imbalanced.

Misc.					
	Lactate	CRP			
Current:	*4.1*	*55*			

What lab results are RELEVANT and must be recognized as clinically significant by the nurse? *(Reduction of Risk Potential/Physiologic Adaptation)*

RELEVANT Lab(s):	Clinical Significance:
Lactate CRP	Acid base imbalance This elevation indicates infection

Lab Planning: Creating a Plan of Care with a PRIORITY Lab:

(Reduction of Risk Potential/Physiologic Adaptation)

Lab:	Normal Value: 5-10	Clinical Significance:	Nursing Assessments/Interventions Required:
WBC **Value: 14.5**	**Critical Value:** ➢ **10**	**Elevated WBC count can indicate inflammation and infection**	We want to continuously assess vital signs. We want to monitor temperature and look for a fever. We want to look for an elevated HR. We also want to continue assessing abdomen for possible distension and pain.

Clinical Reasoning Begins…

1. ***Interpreting relevant clinical data, what is the primary problem? What primary health-related concepts does this primary problem represent?*** *(Management of Care/Physiologic Adaptation)*

Problem:	Pathophysiology of Problem in OWN Words:	Primary Concept:
Infection. Appendicitis w. possible rupture or impending peritonitis.	Appendicitis results in an inflamed appendix due to infection. Typical symptoms include dull, sever, cramp like discomfort in the RLQ, lack of appetite, upset stomach (vomiting & nausea,) high fever, failure to pass gas, diarrhea, and constipation.	Risk for infection.

Collaborative Care: Medical Management *(Pharmacologic and Parenteral Therapies)*

Care Provider Orders:	Rationale:	Expected Outcome:
Establish peripheral IV	- To have access to a vein for potential surgical intervention	Maintain fluid/electrolytes and prepare for med administration
0.9% NS 1000 mL IV bolus	- To maintain fluid & electrolyte balance. Can also keep BP stable	Indicated due to patient's NPO status
Morphine 2 mg IV every 2 hours PRN	- Administered for pain	Decreases pain from his initial 8/10
Ondansetron 4 mg IV every 4 hours PRN nausea	- Decrease nausea	This will help nausea and vomiting
Ceftriaxone 1 g IVPB x1 now	- Given for infection	Decrease number of bacteria causing infection – lower WBC
Metronidazole 500 mg IVPB every 12 hours	- Another antibiotic given for infection	
General surgeon consult	- It is importance to consult with the surgeon so the surgeon is aware of the patient's state/situation and is ready for surgery	Surgery can be performed so patient status can improve
Strict NPO		

	- Needed for potential surgery	Needed for a safe procedure.

PRIORITY Setting: Which Orders Do You Implement First and Why? *(Management of Care)*

Care Provider Orders:	Order of Priority:	Rationale:
x Establish peripheral IV x 0.9% NS 1000 mL IV bolus x Morphine 2 mg IV every 2 hours PRN x Ondansetron 4 mg IV every 4 hours PRN nausea x Ceftriaxone 1 g IVPB x1 now x Metronidazole 500 mg IVPB every 12 hours	- Establish IV - Morphine administration - 0.9 NS 1000mL IV bolus - Ceftriaxone - Metronidazole - Ondansetron	- IV access must be available for any med - Decreasing pain seems as if it should be priority for any patient - I then would hag the NS and ceftriaxone antibiotic since it is a current order - I then would give the Metronidazole and Ondansetron since they are PRN medications for potential nausea/vomiting

Collaborative Care: Nursing

2. What nursing priority (ies) will guide your plan of care? *(Management of Care)*

Nursing PRIORITY:		
PRIORITY Nursing Interventions:	**Rationale:**	**Expected Outcome:**
- Vital sign assessments (frequent) - Pain assessment - Reassessing pain after meds are given - GI assessment - Medication administration	- To be aware of increased severity or potential worsening of infection - Assessing rate, characteristics, and location of pain to monitor is infection is progressing - GI assessment is needed to assess appendix status - Medication administration is used to decrease pain and treat potential infection as well as decrease any nausea/vomiting he may feel from surgery	The nurse will familiarize herself/himself with the patient's condition by completing all of the assessments. This will allow the nurse to be able to give an adequate SBAR and treat the patient appropriately. Meds will treat patient's symptoms (pain/inflammation/nausea) etc

3. ***What body system(s) will you assess most thoroughly based on the primary/priority concern?***
(Reduction of Risk Potential/Physiologic Adaptation)

PRIORITY Body System**:**	**PRIORITY Nursing Assessments:**
GI Skin? (Hydration/fluid)	- Vital signs - Bowel sounds - Checking appetite - Last BM and characteristic of the stool - Assessing abdomen - S/S of potential rupture of organ - Skin turgor for hydration

4. ***What is the worst possible/most likely complication(s) to anticipate based on the primary problem of this patient?***
(Reduction of Risk Potential/Physiologic Adaptation)

Most Likely PRE-OP Complication:

Worst Possible/Most Likely Complication to Anticipate:	**Sepsis – this could be potentially fatal.**	
Nursing Interventions to PREVENT this Complication:	**Assessments to Identify Problem EARLY:**	**Nursing Interventions to Rescue:**
Administer antibiotics as orderd Frequent assessments Being in good contact with patient's physician and other medical team members	Vitals vitals vitals! GI assessment.	Surgery

Most Likely POST-OP Complication:

Worst Possible/Most Likely Complication to Anticipate:	**Infection** **Collapsed lung from being on bed rest.**	
Nursing Interventions to PREVENT this Complication:	**Assessments to Identify Problem EARLY:**	**Nursing Interventions to Rescue:**
Educating patient on using an incentive spirometer while on bed rest Taking care of incisions and being educated on hygiene of the surgical site.	Assess skin for signs of infection... redness, swelling, hot to the touch Vital signs Lung sounds on every entry of the patient's room	Have emergency equipment at bedside Notify provider immediately Call surgeon if possible lung collapse.

5. What psychosocial/holistic care PRIORITIES need to be addressed for this patient?

(Psychosocial Integrity/Basic Care and Comfort)

Psychosocial PRIORITIES:	Anxiety Not coping appropriately	
PRIORITY Nursing Interventions:	**Rationale:**	**Expected Outcome:**
CARE/COMFORT: ***Caring/compassion as a nurse*** ***Physical comfort measures***	- Facetime/ visits from family and friends - TV time - Have patient sit in bed comfortably - Ensure patient is comfortable with enough pillows and blankets - He is an athlete so ensure he can pull up sports channels on TV if desired	- Patient will feel more comfortable and have more trust in you. - Patient will trust you to educate him on the procedure and condition to lower anxiety.
EMOTIONAL (How to develop a therapeutic relationship): ***Discuss the following principles needed as conditions essential for a therapeutic relationship:*** x *Rapport* x *Trust* x *Respect* x *Genuineness* x *Empathy*	. - It is imperative for the nurse to have a good rapport with the patient, so the patient has trust in his caretaker. The nurse must express honesty, active listening, and empathy. These communication techniques will make the experience between for both patient and nurse and help alleviate the young patient's anxiety and nervousness.	- Patient will feel more comfortable. Patient anxiety will lessen. Patient will be more comfortable asking questions and opening up.
SPIRITUAL:	- The patient may feel hopeless being in the hospital not partaking in sports. He has a big group of friends, and he may feel left out of team activates and overall social interaction. If the patient practices a certain religion, he can pray for a quicker and smoother recovery time. This can ease his mental.	- We want to educate the patient on recovery time and what to expect. Honesty is the best approach here. Again, the patient will trust the nurse.

CULTURAL Considerations (IF APPLICABLE)		

Evaluation: Four Hours Later…

John had a laparoscopic appendectomy without apparent complications. He is currently in PACU and has just returned to the med/surg floor.

Current VS:	**Most Recent (from PACU):**	**Current PQRST:**	
T: 100.4 F/38.0 C (o)	**T:** 99.8 F/37.7 C (o)	**P**rovoking/Palliative:	Movement worsens
P: 92 (reg)	**P:** 84 (reg)	**Q**uality:	Dull ache
R: 20 (reg)	**R:** 18 (reg)	**R**egion/Radiation:	RLQ
BP: 136/86	**BP:** 124/80	**S**everity:	5/10
O2 sat: 97% room air	**O2 sat:** 99% room air	**T**iming:	Continuous

Initial Postop Assessment by Primary Nurse

What body system(s) will the nurse most thoroughly assess based on the problem and the clinical data collected to this point? *(Reduction of Risk Potential/Physiologic Adaptation)*

PRIORITY Body System(s):	**PRIORITY Nursing Assessments:**
All body systems are priority returning from a procedure. We want to ensure the patient is returning to normal after being under anesthesia.	- ABCs - Vitals (including a pain assessment) - Surgical site - GI assessment - Neuro - HEENT - Respiratory - Circulatory/Cardiovascular - Skin (hydration)

Current Assessment:	
GENERAL SURVEY:	Appears to be in no acute distress, the body appears tense. Occasional moans; moves as little as possible and grimaces with movement.
NEUROLOGICAL:	Drowsy, but arousable, alert & oriented to person, place, time, and situation (x4)
HEENT:	Head normocephalic with the symmetry of all facial features. PERRLA, sclera white

	bilaterally, conjunctival sac pink bilaterally. Lips, tongue, and oral mucosa pink and moist.
RESPIRATORY:	Respirations shallow, breath sounds clear but diminished with equal aeration on inspiration and expiration in all lobes anteriorly, posteriorly, and laterally, nonlabored respiratory effort on room air.
CARDIAC:	Pink, warm & dry, no edema, heart sounds regular, pulses strong, equal with palpation at radial/pedal/post-tibial landmarks, brisk cap refill. Heart tones audible and regular, S1 and S2 noted over A-P-T-M cardiac landmarks with no abnormal beats or murmurs.
ABDOMEN:	Abdomen flat and tender to gentle palpation. No BS auscultated in all four quadrants. Three small dressings on the abdomen with no drainage present
GU:	Has not voided since surgery
INTEGUMENTARY:	Skin warm, dry, intact, normal color for ethnicity. Cap refill <3 seconds, Hair softdistribution normal for age and gender. Skin integrity intact, skin turgor elastic, no tenting present.

1. ***What data is RELEVANT and must be interpreted as clinically significant by the nurse?*** *(Reduction of Risk Potential/Health Promotion and Maintenance)*

RELEVANT VS Data:	**Clinical Significance:**	**TREND: Improve/Worsening/Stable:**
Temp HR O2 sat RR Pain score BP	Vital signs are decreasing and stabilizing which is what we want to see after a procedure. This is showing an early sign of no complications.	*Improve*
RELEVANT Assessment Data:	**Clinical Significance:**	**TREND: Improve/Worsening/Stable:**
Patient is avoiding movement Shallow breath sounds No bowel sounds No void since procedure Moaning	- Patient is avoiding movement as a guard reaction to pain - No bowel sounds and no voiding is a normal sign after a procedure, but we need to continue monitoring this - Shallow breath sounds also a normal finding post op. But must be addressed so we are not blind to a collapsed lung	*Stable*

2. ***Based on your current evaluation, what are your CURRENT nursing priorities and plan of care?*** *(Management of Care)*

CURRENT Nursing PRIORITY:	Prevent complications following surgery

PRIORITY Nursing Interventions:	Rationale:	Expected Outcome:
Pain management Administering antibiotics Advance diet as ordered and tolerated Ambulate as tolerated Educate on deep breathing and use of spirometer Wound/surgical site care VS monitoring Pain assessments (frequent) Monitor for voiding and BM	Pain management and administering antibiotics will keep patient's pain and inflammation low. Advancing diet must be thought about because it needs to be done slowly so the body can adjust appropriately. Ambulating will decrease chance of clotting but also maybe be more comfortable for the patient Deep breathing and spirometer use is importance to reduce risk of collapsed lung Surgical site care is important to catch any potential infections and to monitor how wound is healing. VS monitoring allows nurse to note patient progress post op BM and voiding needs monitored because it is important this go back to normal after post op. This needs to be kept an eye on for potential complications	- Keep pain to a minimum - Keep electrolytes/fluids balanced - Keep patient nutrition appropriate - Avoid complications such as lung collapse and clotting

Collaborative Care: Postop Medical Management *(Pharmacologic and Parenteral Therapies)*

Care Provider Orders:	Rationale:	Expected Outcome:
Morphine 2-4 mg IV every 4 hours PRN pain	Pain	-Pain will decrease
Ondansetron 4 mg ODT every 8 hours PRN nausea	Nausea	-Nausea and vomiting will subside
Ceftriaxone 1 g IVPB every 12 hours	Given for Post op infections and keeping original infection gone from body	-Infection will go away
Metronidazole 500 mg IVPB every 12 hours	Another antibiotic	- Patient will have balanced F&Es
D5 ½ NS w/20 mEq KCl 75 mL/hour until tolerating PO fluids	Given for F&E balance	

It is now the end of your shift. Effective and concise handoffs are essential to excellent care and, if not done well, can adversely impact the care of this patient. You have done an excellent job to this point; now finish strong and give the following SBAR report to the nurse who will be caring for this patient who is now fours postop: *(Management of Care)*

Situation:

Name/age: John Washington/14yo

Summary of the primary problem: Patient underwent emergency appendectomy

Day of admission/post-op #: Admitted today; post op day 1 today

Background:

Primary problem/diagnosis: *Patient presented to emergency department with excruciating RLQ pain and was experiencing vomiting and nausea*

RELEVANT past medical history: N/A

Assessment:

Most recent vital signs: T: 99.8, P: 84, RR: 18, BP: 124/80, O2: 99% on room air

RELEVANT body system nursing assessment data:
All body systems within normal limits except for GI. Abdomen flat and tender with palpation. Bowel sounds not present in all 4 quadrants. 3 small dressings on abdomen – no drainage. Patient is showing nonverbal signs of pain such as avoiding movement, guarding, and moaning.

RELEVANT lab values: WBC were elevated prior to surgery (14.5) and neutrophils were 88%. Sodium was slightly decreased at 133. Lactate was 4.1 and CRP was at 55.

TREND of any abnormal clinical data (stableincreasing/decreasing): Patient is showing signs of beginning to stabilize. Vital signs are coming down to baseline and the current abnormals are normal in post op care.

How have you advanced the plan of care?
Educating the patient on the use of an incentive spirometer and deep breating techniques.

Patient response: Patient is still tense and guarding. Patient is currently avoiding movement but is being encouraged to ambulate to avoid clotting. **INTERPRETATION of current clinical status (stable/unstableworsening):** **Stable**
Recommendation:
Suggestions to advance the plan of care: -Continue ambulating as tolerated - advance diet as tolerated - Encourage spirometer use every hour -Wound care -Reassessment and VS (frequent!)

Education Priorities/Discharge Planning

What educational/discharge priorities will be needed to develop a teaching plan for this patient and/or family? *(Health Promotion and Maintenance)*

Education PRIORITY:	Preventing infection
PRIORITY Topics to Teach:	**Rationale:**
- What to look for when assessing self for signs of infection - Appropriate techniques for changing dressings - The importance of attending follow-up appointments	- Patient should look for warm areas, areas of pain, swelling, red, or any drainage. - Change when soiled. Can shower 1-2 days following surgery - Attend follow up appointments in case there is further intervention needed and so Dr. can monitor progress post op.

What additional considerations need to be made when teaching the parents of a pediatric patient?

Use Reflection to THINK Like a Nurse

What did you learn that you can apply to future patients you care for? Reflect on your current strengths and weaknesses of this case study identified. What is your plan to make any weakness a future strength?

What Did You Learn?	**What did you do well in this case study?**
My mom had a ruptured appendix in 2008, I was just 12 yo. I learned a lot about the severity of the potential sepsis when I watched my mom go through it. This scenario helped me learn why different interventions and drugs are used.	**I did well with understanding the risks during pre op and post op. I also feel I did well wth prioritizing when it came to administering medication and following nursing assessments.**
What could have been done better?	**What is your plan to make any weakness a future strength?**
I could have brainstormed a bit more. All of the S&Ss of course let to appendicitis but, I could have taken the time to think of other potential issues just to put my mind to the test as a nursing student.	To think outside the box even when you feel confident right away. There could always be more than one answer to a medical problem.