Appendicitis/Appendectomy
UNFOLDING Reasoning

John Washington, 14 years old

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

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:**
excruciating generalized abdominal pain, localized to RLQ	abdominal pain that is localzied to the right lower quadrant highly suggests appendecitis, or ruptured appendix
vomiting after OJ, hasn't had anything to drink since	If the patient has been vomiting and hasn't had anything to drink, there is a very good chance that he is dehydrated and electrolytes may be off
nausea	his nausea can affect how he may take medication
RELEVANT Data from Social History:	**Clinical Significance:**
14 year old, healthy male .	if he is a healthy male, he could be at a higher risk of developing appendicitis due to sports or activity

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:**
temperature	the client's elevated temperature is suggestive of an inlammation
pulse	his elevated pulse and blood pressure are a telling sign that the patient is indeed in severe amount of pain, this may also mean that the patient is under a lot of stress and his cardiac output is increased
blood pressure	
severe pain RLQ	severe pain in the right lower quadrant is suggestive of appendicitis, or 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 cardiovascular	GI will have to be assessed thoroughly because of the abdominal pain, his abdominal sounds need to be assessed to find out if there's any underlying problem, physical assessment of the abdomen will also be very important to assess for appendicitis and other conditions

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:
the patient's positive rebound tenderness, diminished bowel sounds/hypoactivity dark amber urine	Rebound tenderness upon palpation in the right lower quadrant is suggestive of appendicitis or ruptured appendix, the hypoactive bowel sounds indicate that there is something wrong with the GI system and this needs to be addressed, this can also indicate bowel obstruction which is a medical emergency dark amber urine suggests that there is blood coming from the

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	the appendix seems to be inflamed or filled with blood/fluid, indicating that there is at least a local inflammation. This means that the patient may have an appendix infection or some type of tissue damage. The patient's care will depend on this information.

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:
neutrophil and WBC elevated	the elevated WBCs and neutrophils show that there is an 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:
Sodium is lower than normal	the patient's sodium level is lower than normal range, this is consistent with the fact that the patient has vomitted and electrolytes are slightly off. This however, is not terribly outside of range

.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:
CRP	a highly elevated CRP means that there is an infection or severe inflammation, this can also be indicative of tissue damage

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

(Reduction of Risk Potential/Physiologic Adaptation)

Lab:	Normal Value:	Clinical Significance:	Nursing Assessments/Interventions Required:
WBC **Value: 14.5**	**Critical Value:** >30.0	the patient more than likely has an infection	Since the patient has an infection, the patient's vitals need to be assessed regularly to track whether it has gotten worse or the patient has gone septic. Fluids and antibiotics should be administered per provider order to help the patient fight off the infection. Patient must also be NPO in case he needs to go to surgery.

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:
Appendix infection	Normally, the appendix contains bacteria that are generally harmless. However, when a type of bacteria in the gut becomes overpopulated, and outcompete other bacteria, and infection may ensue. This infection can cause general inflammation, and tissue	This problem represents the importance of taking caution

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

Care Provider Orders:	Rationale:	Expected Outcome:
Establish peripheral IV 0.9% NS 1000 mL IV bolus Morphine 2 mg IV every 2 hours PRN Ondansetron 4 mg IV every 4 hours PRN nausea Ceftriaxone 1 g IVPB x1 now Metronidazole 500 mg IVPB every 12 hours General surgeon consult Strict NPO	Peripheral IV is established so that the any medication or fluids that need to be administered can be done quickly, since intravenous administration has the fastest absorption rate. Isotonic fluids is administered in order to reestablish the patient's sodium level back to normal. The patient may also be dehydrated due to emesis and being unable to drink or eat. This will help hydrate the cells and promote increased blood volume. Morphine IV is to be treat severe pain. Ondansetron is taken so that the patient's nausea is treated and that he may be able to drink or eat when appropriate. Ceftriaxone is an antibiotic that is used to treat infection. Metronidazole is taken for intraabdominal infections. General surgeon consult may be needed because the patient's appendix may be so damaged or so infected that it needs to be taken out via appendectomy. Strict NPO is in preparation for the patient's possible surgery so that he does not aspirate during surgery with general anesthesia.	The patient should have reduced pain and his skin turgor should go back to normal. His electrolyte levels, especially sodium should also go back to normal. The patient's nausea should be abated afterwards. Due to the ceftriaxone and metronidazole, the patient's infection should be treated or at least managed.

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

Care Provider Orders:	Order of Priority:	Rationale:
• Establish peripheral IV • 0.9% NS 1000 mL IV bolus • Morphine 2 mg IV every 2 hours PRN • Ondansetron 4 mg IV every 4 hours PRN nausea • Ceftriaxone 1 g IVPB x1 now • Metronidazole 500 mg IVPB every 12 hours	1. Establish peripheral IV 2. Morphine 2 mg IV every 2 hours PRN 3. 0.9% NS 1000 mL IV bolus 4. Ondansetron 4 mg IV every 4 hours PRN nausea 5. Ceftriaxone 1 g IVPB x1 now	The establishment of IV should be done first so that in case the patient's condition worsens, there is already an IV, which makes it easier to administer IV interventions. Morphine should be administered next to manage the patient's pain. I think that the fluid needs to be started immediately due to dehydration and zofran afterwards to prevent the patient losing even more electrolytes in the process. The antibiotics are last because these are not urgent compared to managing the

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:**
Pain assessment and management Vitals assessment	I think that in this case, the patient's pain management should be prioritized. His pain is most likely causing the nausea, vomiting, increased BP and pulse. With this managed, the patient's physiological response may be greatly improved. In addition, his vitals should be assessed regularly to make sure nothing else is happening. Dehydration can be very serious especially during an infection, so it is important to catch signs of dehydration.	The patient should feel a lot better and physiological responses improved. His vitals should also improve, especially his blood pressure and pain.

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	Physical assessment of the abdomen, and tracking I/O and bowel movement.

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:		
Nursing Interventions to PREVENT this Complication:	**Assessments to Identify Problem EARLY:**	**Nursing Interventions to Rescue:**
Hypoglycemia	Blood glucose routinely	The patient may be given glucose intravenously.

Most Likely POST-OP Complication:

Worst Possible/Most Likely Complication to Anticipate:		
Nursing Interventions to PREVENT this Complication:	**Assessments to Identify Problem EARLY:**	**Nursing Interventions to Rescue:**
DVT or PE	Check for holmans sign, or pain in calf, dyspnea, SOB	The patient may be given a clot buster or blood thinner, and oxygen as well

5. ***What psychosocial/holistic care PRIORITIES need to be addressed for this patient?***
(Psychosocial Integrity/Basic Care and Comfort)

Psychosocial PRIORITIES:	The patient is 14 years old, and may be very anxious and feeling very isolated. I think that having his parents or friends visit may	
PRIORITY Nursing Interventions:	**Rationale:**	**Expected Outcome:**
CARE/COMFORT: ***Caring/compassion as a nurse*** ***Physical comfort measures***	Caring and compassion as a nurse are very important because this is how we communicate with others that we care and that we want to take care of their needs.	With these interventions, the patient should be doing better
EMOTIONAL (How to develop a therapeutic relationship): ***Discuss the following principles needed as conditions essential for a therapeutic relationship:*** • *Rapport* • *Trust* • *Respect* • *Genuineness* • *Empathy*	Rapport and trust are important aspects of nursing care. These two establishes a working relationship between the patient and the nurse. People generally do not follow people that they do not trust, so building rapport and showing our trustworthiness is important in implementing nursing interventions. Respect is also very important because this lets the client know	With all this emotional support, the patient should be very compliant and in a much better emotional, psychological and spiritual state. They would be very
SPIRITUAL:	Humans are not just physical beings, but	The patient should
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:**
GI	The patient's gastrointestinal system should be assessed because this is the system most affected by the surgery. The nurse should be assessing for any bruising n the abdomen, and should be listening for normal bowel sounds.

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 soft-distribution 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:**
Temperature	The patient's temperature should be monitored for signs of worsening infection.	Worsening - the patient's temperature has risen since PACU
RELEVANT Assessment Data:	**Clinical Significance:**	**TREND: Improve/Worsening/Stable:**
No BS auscultated	If there's no bowel sounds, the patient may be at risk for bowel obstruction due to constipation from general anesthesia.	stable - patient is not in acute distress for now

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

CURRENT Nursing PRIORITY:	Continue to monitor patient's vital signs	
PRIORITY Nursing Interventions:	**Rationale:**	**Expected Outcome:**
Vital sign monitoring more frequently	The patient's temperature has gone up since after surgery, which means there might be post-op inflammation, or it may mean the beginning of worsening infection into sepsis.	The patient's vital signs should return to normal with proper medical intervention. With vital sign monitoring as nursing

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	To treat the patient's post-op pain.	The patient should report lowered pain in a numerical scale. His nausea should have improved, his fever should go down as his body fights off the infection with the help of the antibiotic. The patient's pulse should also go down and blood
Ondansetron 4 mg ODT every 8 hours PRN nausea	Zofran is taken to treat nausea.	
Ceftriaxone 1 g IVPB every 12 hours	Ceftriaxone is an antibiotic administered to fight off infection.	
Metronidazole 500 mg IVPB every 12 hours	Metronidazole is administered to treat intraabdominal infections.	
D5 ½ NS w/20 mEq KCl 75 mL/hour until tolerating PO fluids	Fluid is administered to help the patient get rehydrated and restore fluid volume deficit as a possible outcome of surgery, in addition to not having had anything to drink since his pain started.	

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, 14 years old

Summary of the primary problem:

the patient has been complaining of RLQ quadrant pain since 2 am this morning. He had emesis and was not able to keep food down

Day of admission/post-op #:

03/03/2022

Background:

Primary problem/diagnosis: appendicitis

RELEVANT past medical history: the patient is a healthy 14 year old boy

Assessment:

Most recent vital signs: BP136/86, T: 100.4F oral, Respiration:20, O2 sat room air: 97%, pulse 92, with rlq pain of 5 out of 10, dull, continuous and worsens on movement

RELEVANT body system nursing assessment data: GI: No BS in all quadrants, hasn't voided since surgery

RELEVANT lab values:

WBC of 14.5, Neutrophils is 88%, CRP is 55, and Sodium is 133

TREND of any abnormal clinical data (stable-increasing/decreasing): How have you advanced the plan of care?
Patient response: the patient's blood pressure was high upon admission, his temperature and pulse were also up. Pt was given zofran for nausea, and antibiotics for the infection, he

blood pressure has since gone down, so did temperature, but it went up again after surgery, pulse has

INTERPRETATION of current clinical status (stable/unstable worsening): the patient is currently stable, although his temperature has been elevated after surgery, everything else has improved since after

Recommendation:

Suggestions to advance the plan of care: The patient's VS should still be routinely assessed. The patient should be assessed for possible DVT, and call the provider for any dyspnea, SOB, and pain in the calf, if positive for Holman's sign. Continue with fluids and antibiotic administration. Assess abdomen and perform visual inspection frequently.

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:	Increase the patient's knowledge of risk for injury, and infection
PRIORITY Topics to Teach:	**Rationale:**
Prevention of surgical dehiscence Infection Prevention and Medication Regimen Primary Care Provider follow-up	After the patient is discharged, he is at an increased risk of dehiscence or post-surgery complication inside his abdomen where the appendectomy was performed. This means that the patient should be avoiding any contact sports or any strenuous activity until getting approval from primary care provider. The patient should also be continuing antibiotic treatment in order to completely treat the infection and prevent any recurrence. He should finish his round of antibiotics to prevent antibiotic resistance and complete treatment of infection. The patient should be hydrating and keeping a healthy diet to promote wound healing and prevent dehydration and infection. The patient must follow up with primary care provider to help him manage his health and make sure that his PCP is aware of his change in health status.

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

The parents should be educated in terms of assisting the patient and making sure that he does not overexert himself. They should also be educated on how to better help the pediatric patient stick to his medication regimen.

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?**
I think that I learned how to look at lab results and see if anything is abnormal and require special attention.	I was able to identify the abnormal vitals and what it meant for the patient, and his physiological response to his change in health status. I think I was also able to identify the correct rationale for the patient's
What could have been done better?	**What is your plan to make any weakness a future strength?**
I think that I was not really making good decisions on the nursing interventions that I planned for the patient. Although not terrible, I think that there are more nursing interventions	I plan on reading up on more nursing interventions so that I can address the patient's needs. I think most of my weakness comes from lack of knowledge about