

How To Manage The Orders In Pediatric Patients Before And After Surgery

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Before the operation/admission

- Taking history
- Detailed physical examination
- Initial diagnoses (usually more than one diagnosis)
- Making the plans

How To Prescribe The Orders In Pediatric Patients Before And After Surgery

- The orders should be prescribed under a regular frame.
- Followed after delicate history taking and physical examination.
- Always keep high concentration during the prescribing!!

Frame

- Admission
- Diagnosis
- Condition
- Allergy
- Vital signs
- Activity
- Nursing
- Diet
- IVF
- Medications
- Lab & Exams
- Other tests

Examples

- 10 y/o boy; 30 Kg
- Abdominal pain for 3-4 days (initially at the right lower quadrant; then became diffuse abdominal pain)
- TPR = 39.5°C/150/35; 90/60 mmHg
- Lip dry, tired looking
- Diffuse muscle guarding, especially at right lower quadrant
- WBC 23,000 (S88/L5/B5); CRP 230 mg/l
- BUN33/creatinine0.9; Na125; K3.3
- Echo: dilated bowel loops with much turbid ascites

Admission

- Which ward?
- Which department?
- Which doctor?
- Almost an automated order
in our hospital

Diagnosis

1. Acute appendicitis with perforation

Diagnosis

1. Acute appendicitis with perforation
2. Sepsis

Diagnosis

1. Acute appendicitis with perforation
2. Sepsis
3. Dehydration

Diagnosis

1. Acute appendicitis with perforation
2. Sepsis
3. Dehydration
4. Electrolyte imbalance

Diagnosis

- Do you miss any major diagnosis?
- Does the diagnosis match (agree) with the history and PE findings?
- Is there any minor diagnosis you should add on? (URI, asthma, thalassemia)
- Avoid mis-spelling!!!

Which one is correct?

- Hypospadias / Hypospadia
- Imperforate anus / Imperforated anus
- Intussusception / Intususception
- Currant jelly stool / Current jelly stool
- Wilms' tumor / Wilm's tumor

Condition

- Stable: age/general condition/past history
- Guarded: any one above with minor defect
- Risky: at least one above with major defect
- Critical: unstable vital signs
- Different physician might judge as different condition.

Allergy

- Must record on the first page of the chart!!
- Put a note on the hard cover of the chart
- NKA: No known allergen
- Use abbreviation as less as possible

Vital signs

- As XXXX routine
- Record I/O
- Check vital signs qxx hours (qxxh)
- Check vital signs q shift
- Do not use unusual terms in your orders to avoid misunderstanding
- Do not prescribe unnecessary orders, such as check vital signs q1-2h in general ward

Activity

- No limitation
- Limited to the bed (with the toilet) – brain aneurysm
- Encourage ambulation –after abdominal surgery

Nursing

- On NG tube
- On Foley catheter
- On CVP
- On arterial line
- On chest tube
- Digital examination
- Anything you need the assistance from the nurse!

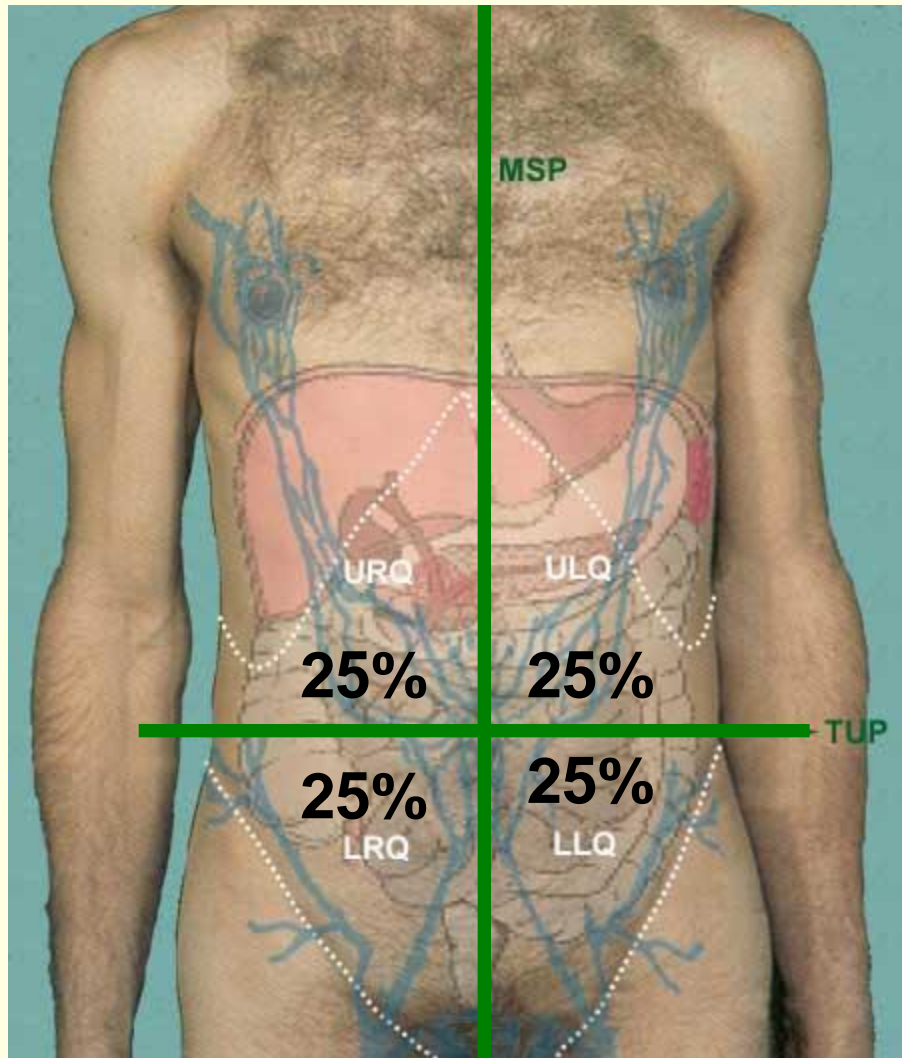
Diet

- NPO
- On xxx diet (on DM diet; on low salt diet)
- On diet????
- Ad libitum (oral intake as tolerable)

IVF – step 1: how much water

- The fundamental order in pediatric patients
- $IVF = \text{basic maintenance} + \text{loss} + \text{deficit}$
- Basic maintenance : 100-50-20 rule
- Loss : present and future
 - Drain
 - Third space
 - Estimated by I/O record and rule of the quadrant
- Deficit : past
 - Dehydration before admission
 - Estimated by vital signs (BW loss, heart rate, PE findings)
- Understanding the basic cardiac, pulmonary and renal condition
- Increase or decrease the IVF if necessary

Rule of the quadrant



- Easy calculation of the third space fluid in the abdomen
- The IVF should increase 25% for each quadrant involved

IVF – step 2: how much salt

- The need of the salt:
 - Na: 2-4 mEq/Kg/day (young infant)
 - Na: 1 mEq/Kg/day (adult)
 - Average: 1-2 mEq/Kg/day (for all patients)
- Understanding the renal condition

IVF – step 3: understanding the IVF

- The simplest IVF
 - Normal saline (N/S) = 0.9% NaCl
 - 5% glucose water = 5% G/W
 - The most important content of the IVF:
glucose, Na, Cl (K, Ca)
- Serum Na: 135 ~ 145 mEq/L
- Serum K: 3.5 ~ 4.5 mEq/L
- Serum Cl: 105-115 mEq/L

IVF – step 3: understanding the IVF

- Concentration of Na (Cl) in different saline
 - 0.9% NaCl = 153.8 mEq/L (how to calculate)
 - 0.45% NaCl = 77 mEq/L
 - 0.225% NaCl = 38.5 mEq/L
- Lactate Ringer ?
- TPN ?
- Which IVF is “ideal” for us?

IVF – step 4: adjusting the IVF

- What is the content of the third space fluid?
 - Serum
 - Gastric juice
 - Intestinal content
 - Colon
 - Urine
 - Ascites
 - Pleural effusion

IVF – step 4: adjusting the IVF

- The salt concentration of the third space fluid was close to the serum.
- In patient with significant third space shifting, the salt of the IVF should increase.

Examples

- 30Kg → 1700cc water/day (basic maintenance)
- Salt need: 30 ~ 60 mEq/day
- IVF → containing Na 18 ~ 35 mEq/L
- Rule of quadrant 1700 x (1.5 ~ 2)

Examples

- IVF: D2.5 0.45S (or D5 S) + KCl
- Rate: no less than 2500cc/day
- Adjust IVF if adequate urine amount

Replacement

- Increase IVF: if not calculable
- Direct replace by proper fluid
 - Replace NG loss by L-R, q8h

Medications

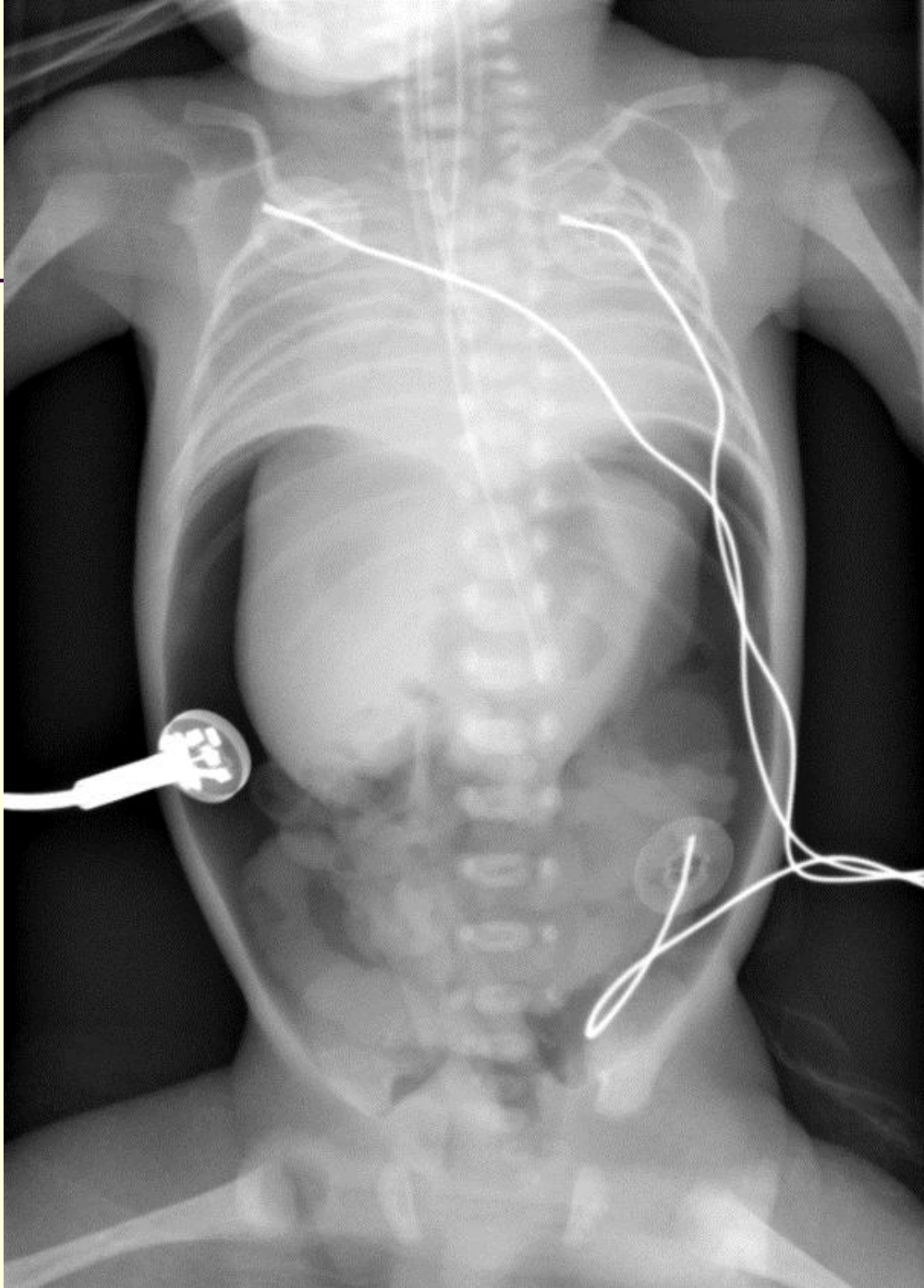
- Antibiotics: empiric or specific to culture
- Spelling and pronunciation
- Anti / auntie
- Dose must be re-checked before you prescribe!!

Lab & Exam

- Avoid under or over investigation!
- Always ask your senior supervisor before you do anything!

Test

- 8 m/o girl 10 Kg
- Fever with severe diarrhea for 5 days
- Severe abdominal distension for 2 days
- Vital signs: 40.5°C/175/35; 80/50 mmHg
- Lip dry, tired looking
- Diffuse muscle guarding
- WBC 3,000 (S40/L5/B25); CRP 230 mg/l
- BUN33/creatinine1.9; Na125; K3.3
- Echo: dilated bowel loops with much turbid ascites

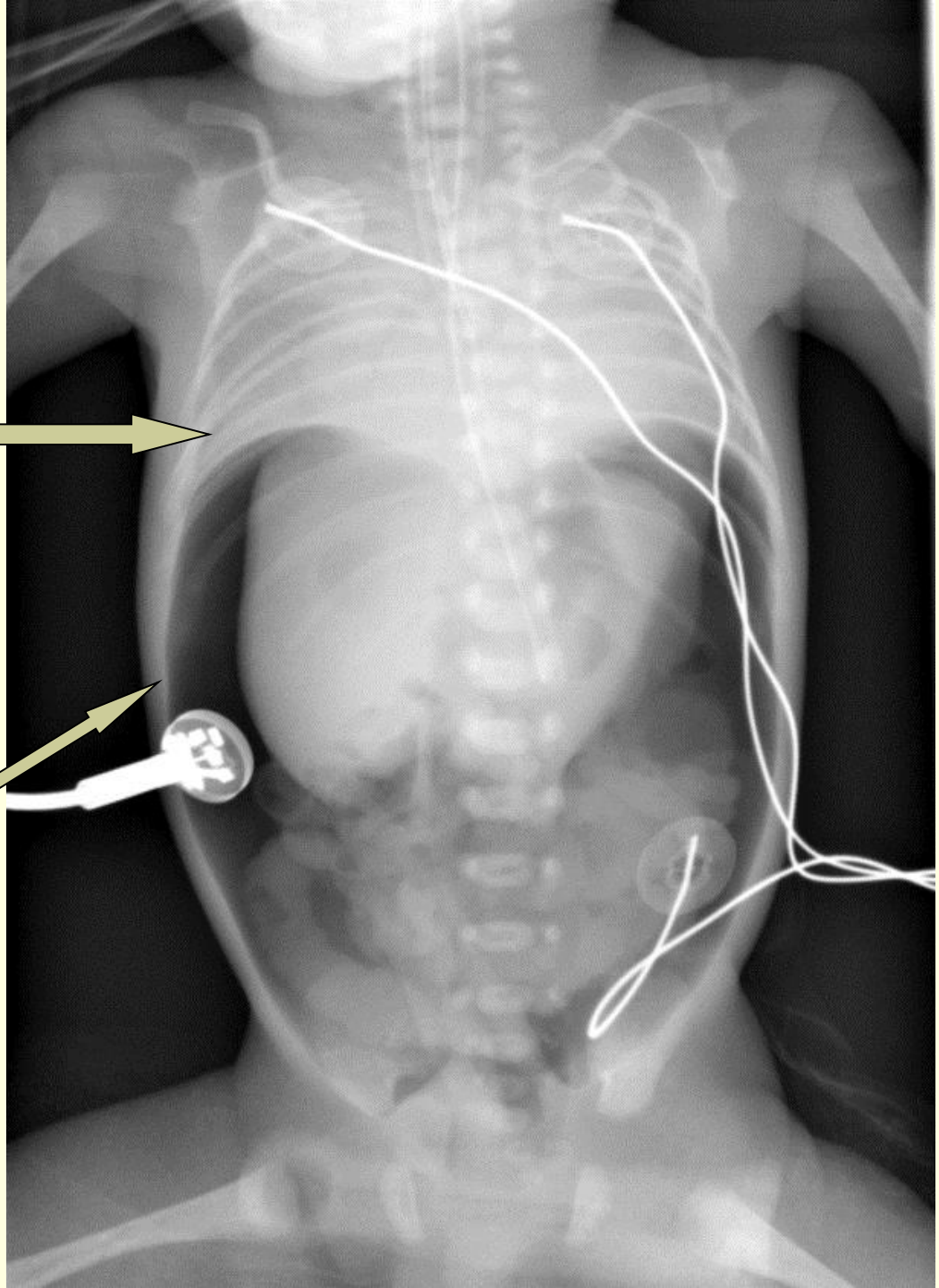
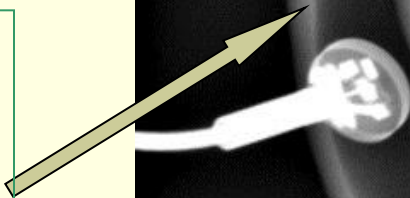


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- The following orders is a reference for you
 - Good luck
 - Enjoy the week in pediatric surgery!

Diaphragm elevation causing lung compression and poor lung expansion



Pneumoperitoneum: foot ball sign; highly suspect enterocolitis with bowel perforation



Orders-1

- Admitted to Dr. xxx's service
- Admitted to PICU
- Diagnosis 1: pneumoperitoneum
- Diagnosis 2: R/O enterocolitis with perforation
- Diagnosis 3: septic shock
- Diagnosis 4: acute renal failure
- Diagnosis 5: severe dehydration
- Diagnosis 6: electrolyte imbalance
- Diagnosis 7: lung atelectasis

Admission

Diagnosis

Orders-2

- Condition: critical
- Allergy: no known allergen
- Vital signs: as PICU routine
- Record I/O q8h
- Acitivity: 不必寫,在ICU一定臥床
- On endotracheal tube (for diaphragm compression & lung atelectasis)
- On ventilator
- On N-G tube
- On Foley tube
- On arterial line (if accessible)
- On CVP (if accessible)
- Etc.....

Condition

Allergy

Vital signs

Nursing

Orders-3

- NPO with NG decompression
- IVF: D2.50.45S (or D5S) + 50% G/W 2 amp run 700cc/q8h
- L-R replace NG loss q8h
- Ampicillin 500mg IV stat and q6h
- Rocephin 500mg IV stat and q12h
- Metronidazole 80mg IV stat and q8h
- Blood culture
- Blood gas
- Prepare blood
- Etc.....

Diet

IVF

IV medications

Lab

Orders-4

- Final and the last: surgeon should be consulted and ready for an emergent operation!!!
- Any inadequate pre-op preparation may increase the surgical risk and possibly increase the morbidity after the surgery!!!!