



Management of Acute Abdomen

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Abdominal Pain in the ED: Stability and Change Over 20 Years

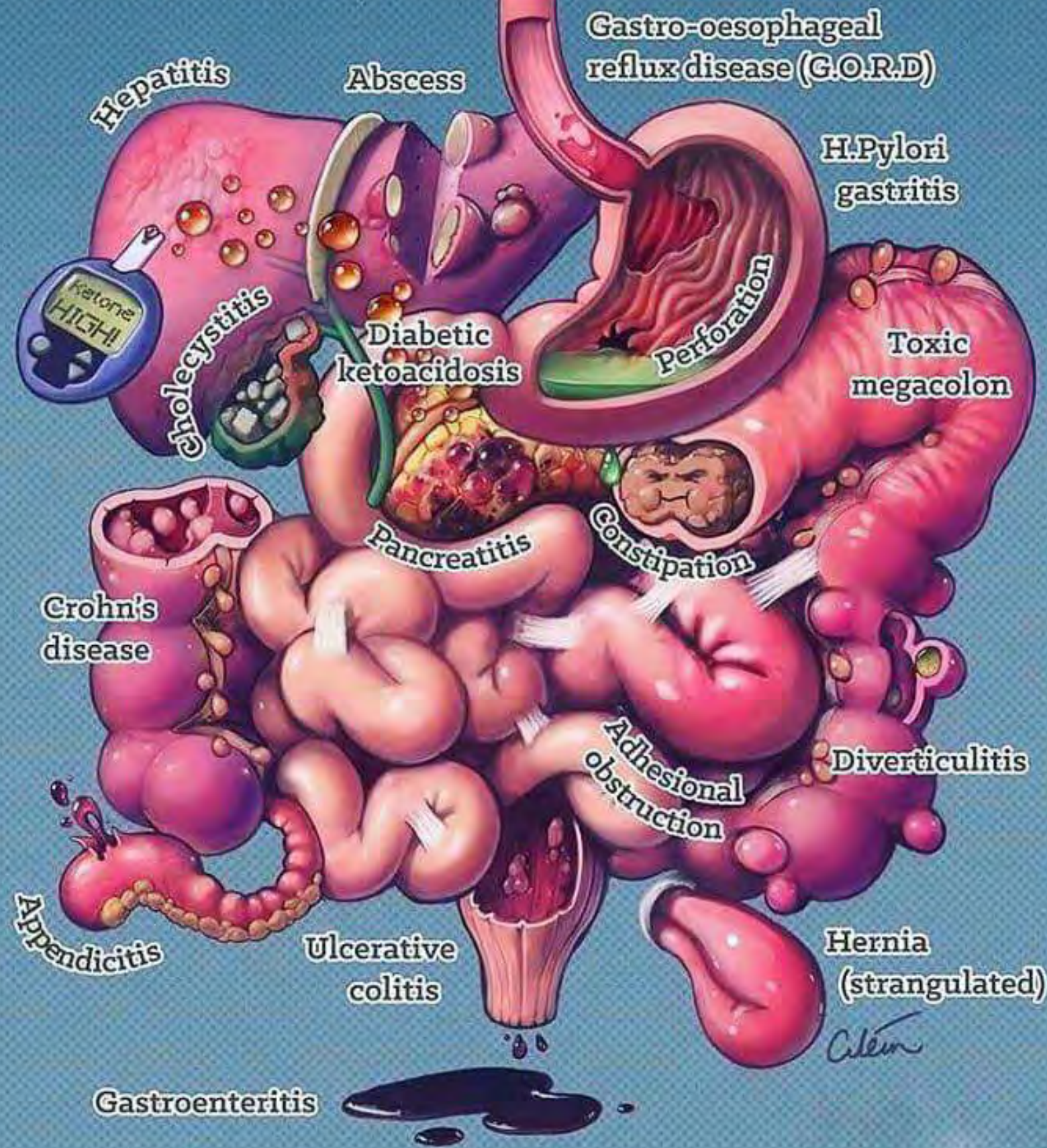
ROBERT D. POWERS, MD, ANDREW T. GUERTLER, MD

1,000 consecutive ED patients with AP seen in 1993 at a 58,000-visit public Level I trauma center ED

Common diagnosis and disposition of adult ED patients with abdominal pain:

- 18% admitted
- 25% undifferentiated abdominal pain
- 12% female pelvic
- 12% urinary tract
- **9.3% surgical gastrointestinal**

Gastrointestinal causes of abdominal pain



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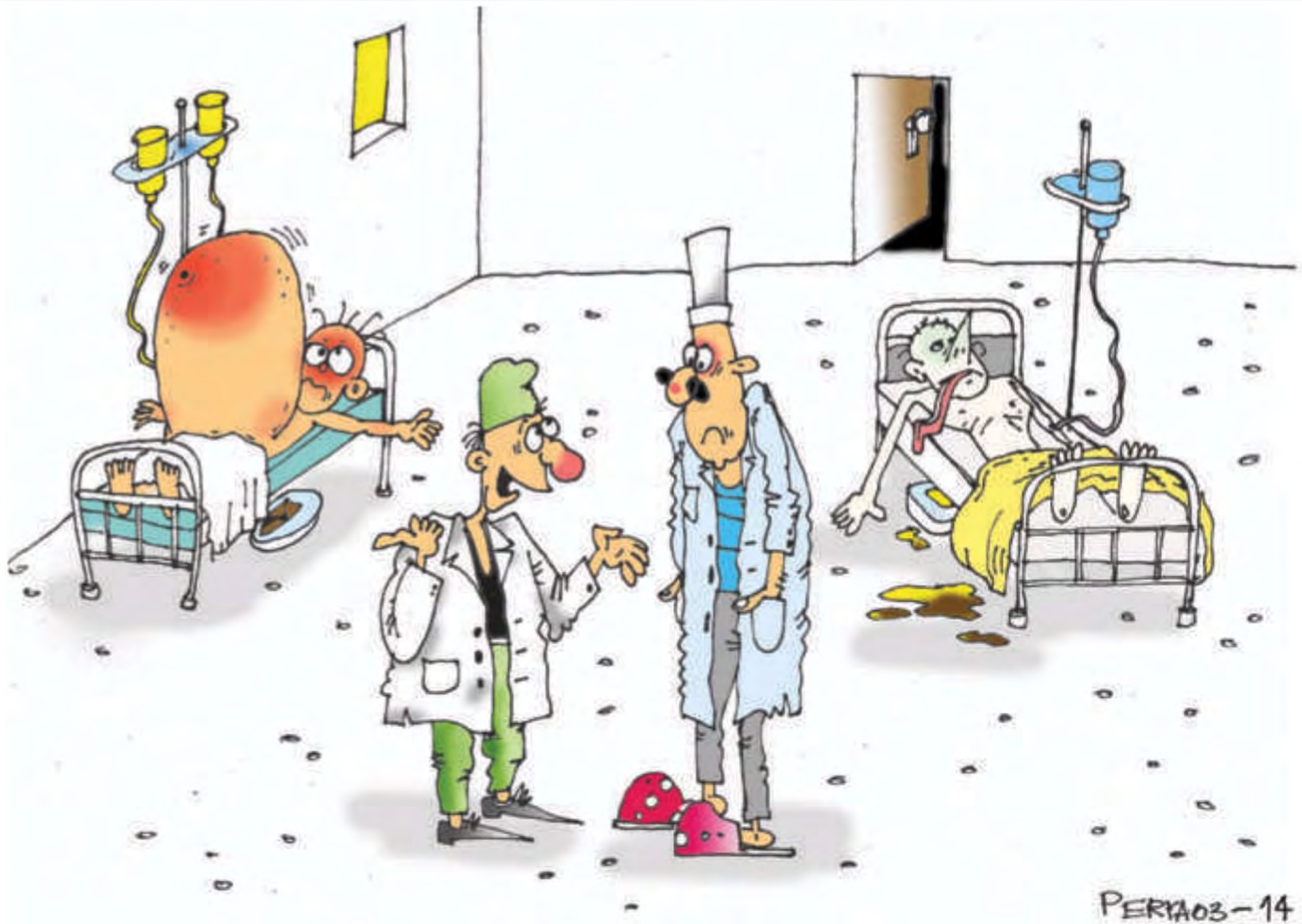
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Common Causes of Abdominal Pain

Causes	Onset	Location	Characteristics	Description	Radiation	Intensity
Appendicitis	Gradual	Periumbilical early; RLQ late	Diffuse early, localized late	Ache	None	++
Cholecystitis	Acute	RUQ	Localized	Constricting	Scapula	++
Pancreatitis	Acute	Epigastric, back	Localized	Blunt	Back	++ to +++
Diverticulitis	Gradual	LLQ	Localized	Ache	None	
Perforated peptic ulcer	Sudden	Epigastric	Localized early, diffuse late	Burning sensation	None	+++
Small bowel obstruction	Gradual	Periumbilical	Diffuse	Cramping	None	++
Ruptured abdominal aortic aneurysm	Sudden	Abdominal, back, flank	Diffuse	Tearing	None	+++
Mesenteric ischemia/infraction	Sudden	Periumbilical	Diffuse	Sharp	None	+++
Gastroenteritis	Gradual	Periumbilical	Diffuse	Spasmodic	None	+ to ++
Pelvic inflammation	Gradual	LQ, pelvic	Localized	Blunt	Upper thigh	++
Ruptured ectopic pregnancy	Sudden	LQ, pelvic	Localized	Sharp	None	++

+ = mild; ++ = moderate; +++ = severe; LLQ = left lower quadrant; RLQ = right lower quadrant; RUQ = right upper quadrant



“Which of them has an ‘**acute abdomen**’?”

Definition

- ***Acute Abdomen*** refers to abdominal pain of short duration that requires a decision regarding whether an urgent intervention is necessary

= Abdominal emergencies

Important Clue ! ! !

Instead of consider the 50 or so “most likely” causes of acute abdominal pain from the list ...
tries to identify a **clinical pattern** and to **decide** on a course of action from a limited menu of management options

Clinical Pattern

1. **Abdominal pain and shock**
2. **Generalized peritonitis**
3. **Localized peritonitis**
4. **Intestinal obstruction**
5. **Waste Basket** (“non-specific” or “medical”)
6. **Gynecological**
7. **Trauma**

Decide Management Options

1. **Immediate operation** (surgery now ... yes NOW !!!)
2. **Emergency operation** (surgery within 2-3 hours)
3. **Urgent operation** (optimize.. surgery tomorrow morning)
4. **Invasive non-surgical treatments** (IVR)
5. **Conservative treatment - in the ICU if necessary**
6. **Discharge Home**

Abdominal Pain and Shock

- Ruptured abdominal aortic aneurysm (AAA)
 - the only management option is immediate surgery—now
- Strangulated Intestinal Obstruction
- Acute Mesenteric Ischemia – **GI Bleeding...**
- Severe Acute Pancreatitis
 - Due to fluid loss into the “third space”

Generalized Peritonitis

- Perforated Peptic ulcer
- Colonic or small bowel perforation
- Perforated Diverticulitis

Caution !!! - **Medical condition** mimicking diffuse peritonitis

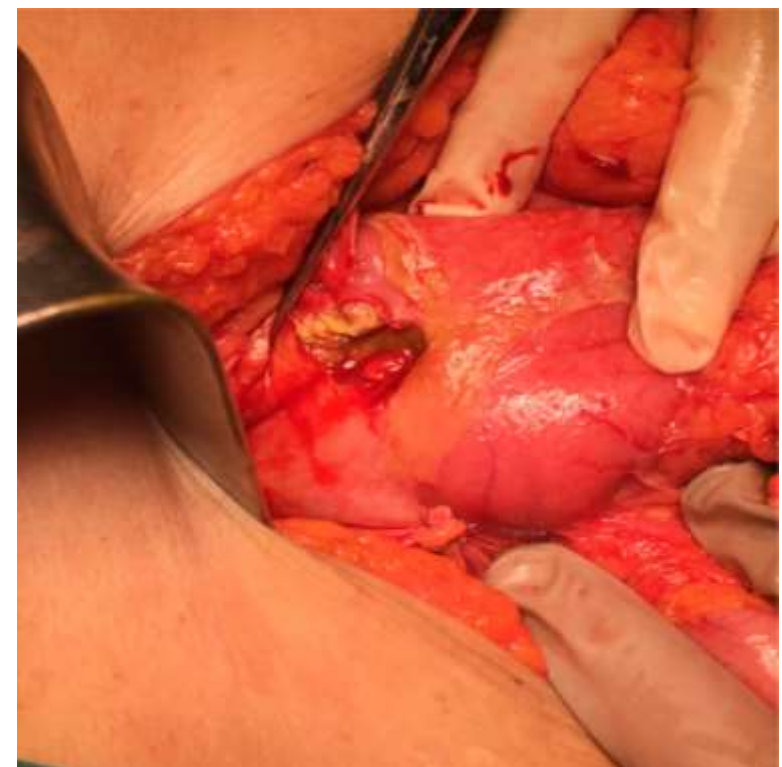
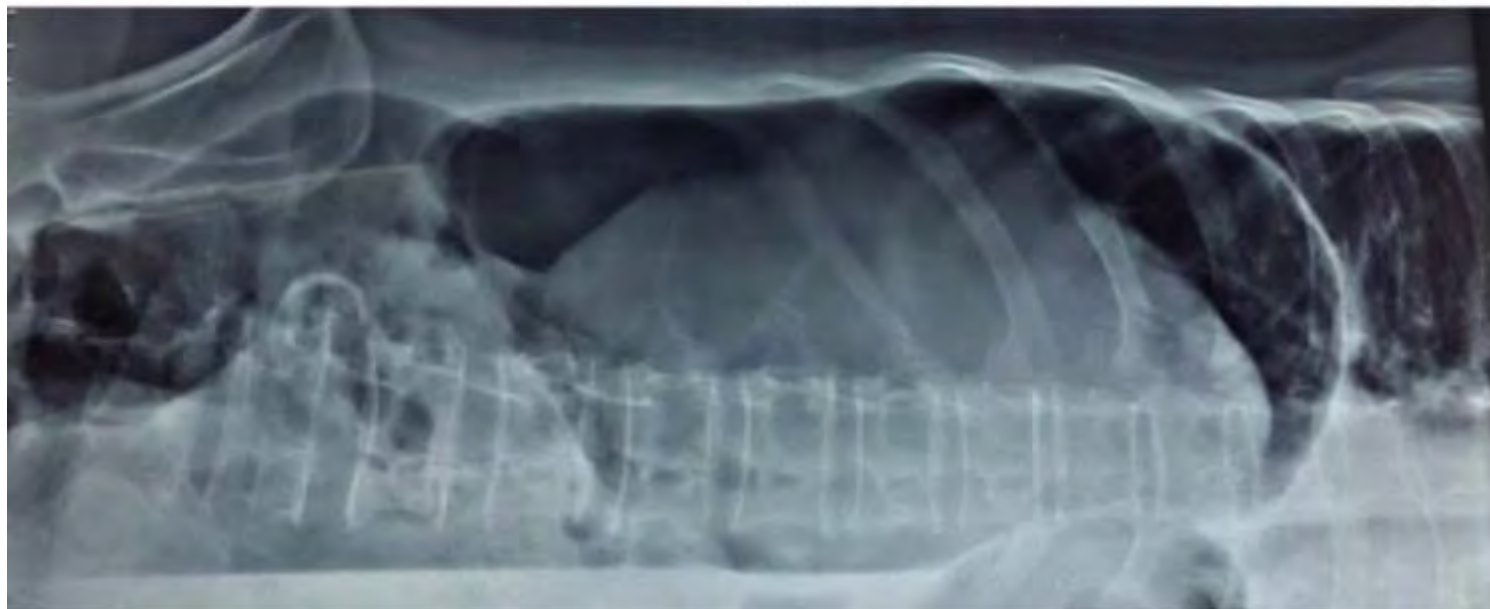
Acute Pancreatitis

Spontaneous Bacterial Peritonitis

Abdominal Tuberculosis

Female, 56yo

Sudden onset abdominal pain, no fever



D/ Perforated Peptic Ulcer

Localized Peritonitis

A
C
U
T
E

Appendicitis – **most common** in adult

Cholecystitis – assess severity

Diverticulitis – simple or complicated ?

C

“silent”

A

D

Differential Diagnosis:

Gynecologic / Obstetric Emergencies

Ureteral Colic

Intestinal Obstruction

- The clinical pattern of intestinal obstruction consists of central, colicky abdominal pain, distension, constipation, and vomiting



*Two Position
usually suffice*

Case 4. Female, 36yo

Abdominal pain (colicky), vomiting, still defecate

history of ovarian cyst surgery

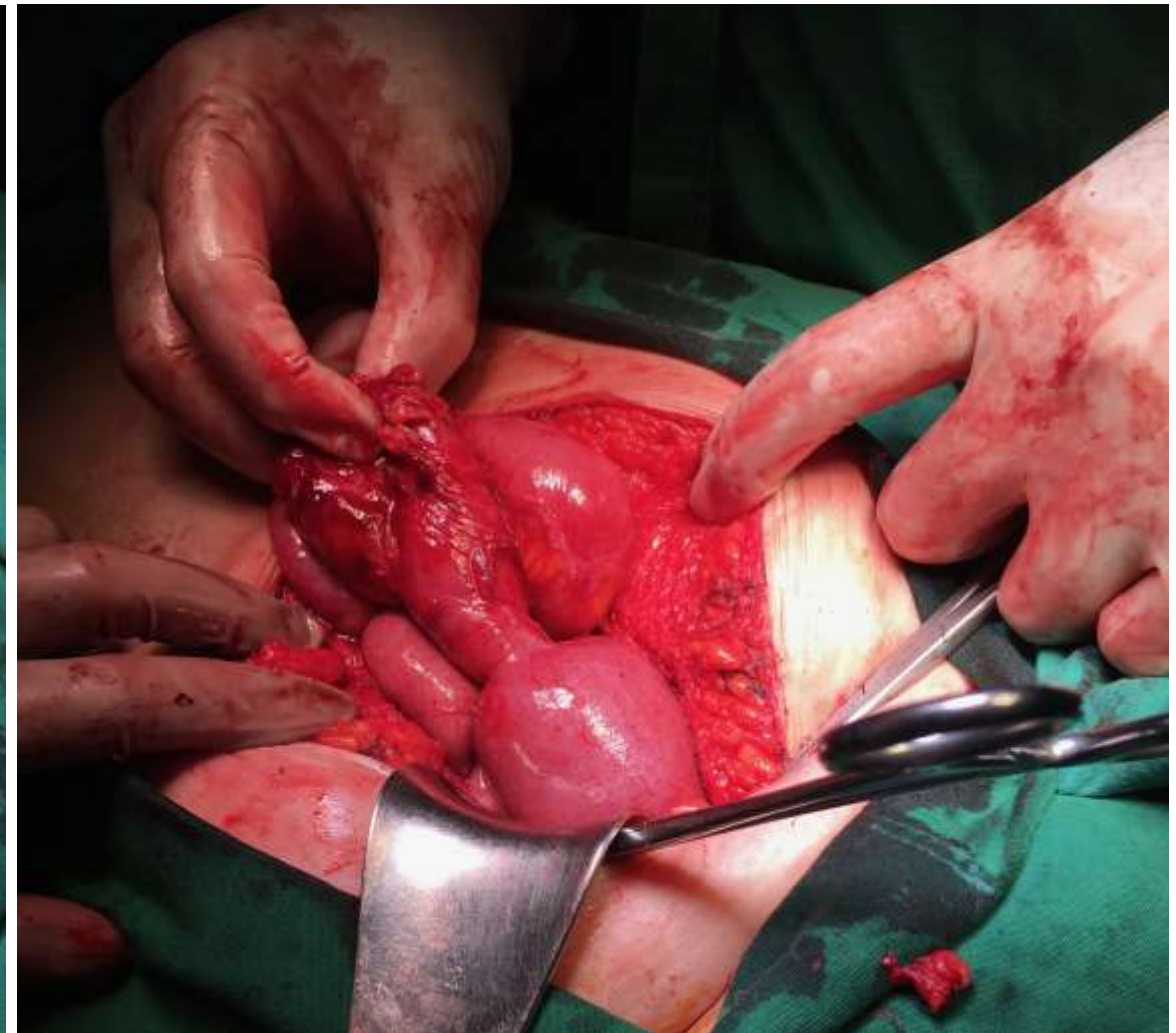


2 Days



Case 4. Female, 36yo

Abdominal pain (colicky), vomiting, still defecate
history of ovarian cyst surgery



D/ Small bowel obstruction due to Adhesion band

Intestinal Obstruction

- The clinical pattern of intestinal obstruction consists of central, colicky abdominal pain, distension, constipation, and vomiting

Classical pitfalls :

- Hernias – never forget to look for it
- “Simple” bowel obstruction – be ware of a more “complex” causes (e.g. tumor, invagination)
- Sigmoid Volvulus – be ready with rigid sigmoidoscope

Inguinal Hernias

- Signs of **Strangulation** – “3T”
 - **T**ension
 - **T**enderness
 - **T**emperature
- Risk of bowel necrosis



Non-operative treatment (“taxis”) is **unjustified**, except in early strangulation in infants

“Medical”

Table 1. Extra-abdominal causes of abdominal pain ¹

Cardiac	Acute coronary syndrome Myocarditis Congestive cardiac failure
Respiratory	Pneumonia Pneumonitis Pulmonary embolism Pneumothorax
Metabolic / Systemic	Ketoacidosis (diabetic and alcoholic) Uraemia Thyrotoxicosis Hypercalcemia Acute adrenal insufficiency Acute porphyria Sickle cell anaemia Acute leukaemia Vasculitis Henoch-Schönlein purpura
Infectious	Herpes Zoster Streptococcal pharyngitis (children) Rocky Mountain Spotted Fever Infectious mononucleosis
Genitourinary	Testicular Torsion Renal colic
Toxins	Heavy metal poisoning Methanol poisoning Black widow spider bite Scorpion sting Acute drug withdrawal states
Miscellaneous	Abdominal wall haematoma Abdominal muscle spasm Somatisation states Neuralgia Hypersensitivity reactions

Gynecological

- (rupture) ectopic pregnancy
- twisted ovarian cyst
- tubo ovarian abscess

Acute abdomen in Obstetrics

Age of pregnancy

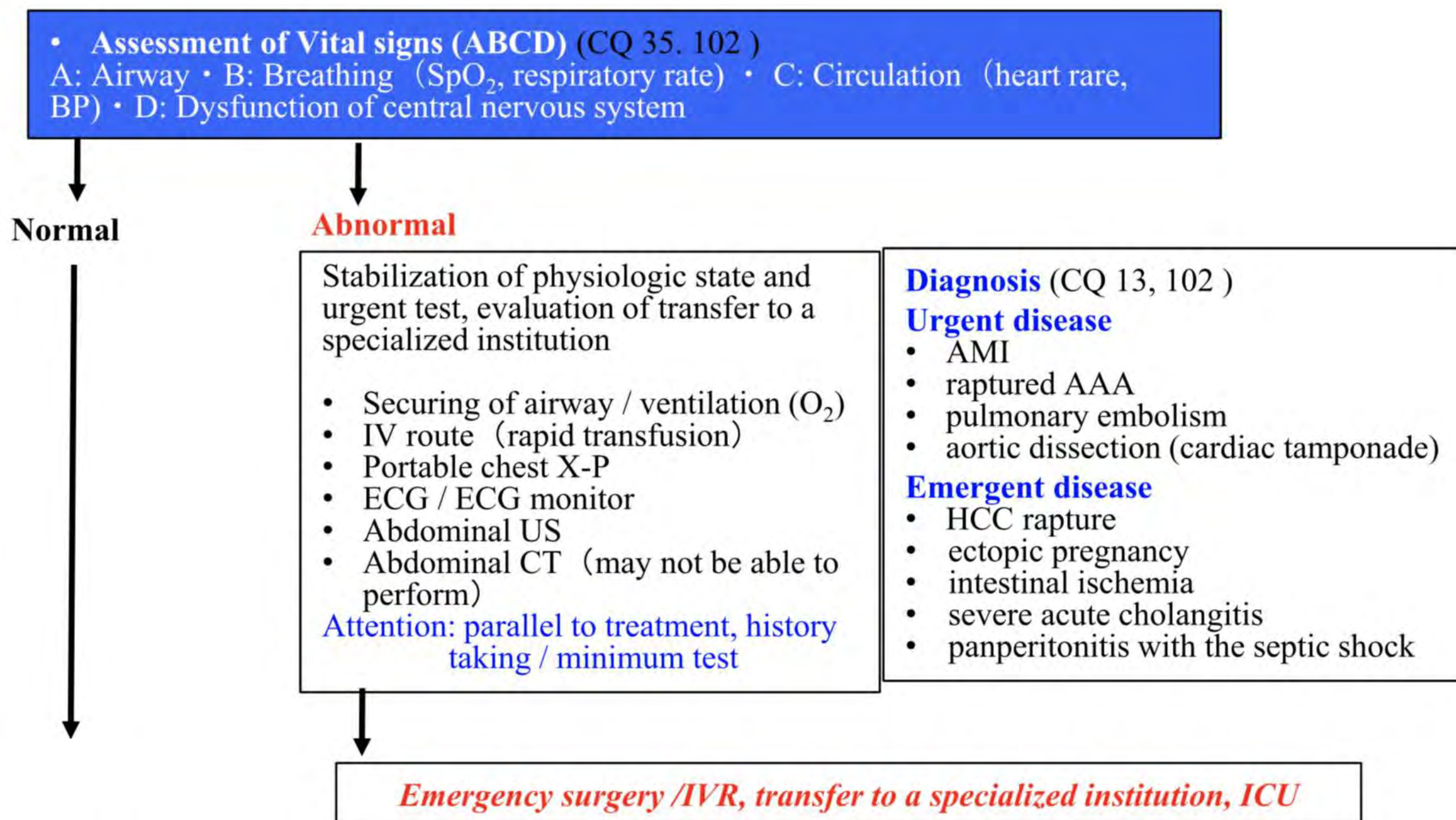
Well being of the fetus

Mother's condition

Practice Guidelines for Primary Care of Acute Abdomen 2015

Toshihiko Mayumi · Masahiro Yoshida · Susumu Tazuma · Akira Furukawa · Osamu Nishii · Kunihiro Shigematsu · Takeo Azuhata · Atsuo Itakura · Seiji Kamei · Hiroshi Kondo · Shigenobu Maeda · Hiroshi Mihara · Masafumi Mizooka · Toshihiko Nishidate · Hideaki Obara · Norio Sato · Yuichi Takayama · Tomoyuki Tsujikawa · Tomoyuki Fujii · Tetsuro Miyata · Izumi Maruyama · Hiroshi Honda · Koichi Hirata

Step 1 (Check vital signs)



Step 2 (Assessment with history & physical examination)

Step 2 (Assessment with history & physical examination)

Evaluate the need of surgery

/IVR

1. History (acute pain, sudden onset, progressive exacerbation)
2. Physical Examination
 - visceral or somatic pain?
 - location
3. Need surgery / IVR?
 - Bleeding
 - organ ischemia
 - Pan-peritonitis
 - Acute inflammation of abdominal viscus

History (CQ 16-31, 93)

- Chief complaint (pain / fever / nausea, vomiting / diarrhea / melena / anuria)
- Oral medicine
- Medical history (surgery, coronary artery disease, diabetes / hypertension, allergy)
- Smoking / alcohol, others

Physical examination (CQ 32-48)

- Sings of peritonitis
- operative scar, hernia, pulsatile mass, palpitation of radial/femoral artery

Laboratory test and Imaging (CQ 49 -75)

- ECG
- ABG
PaO₂ • PaCO₂ • PH • BE • HCO₃⁻ • BS • Lactate
- Blood / urinalysis
CBC/ electrolyte / liver function / renal function / lipase / amylase / blood glucose level / CRP / Troponin/ HBV,HCV/ blood cultures / gestation test
- Abdominal ultrasonography
Intraabdominal effusion (bleeding / ascites), inflammation of abdominal viscus, gallstones, hydronephrosis
- (enhanced) CT or plain X-P
Ischemia or inflammation of abdominal viscus, Intraabdominal effusion (bleeding / ascites), free air

not applicable

applicable

Additional examination, Conservation

Emergency surgery /IVR, transfer to a specialized institution, ICU

Always Remember !!!

- An unexpected negative test result should prompt a **reassessment** of the patient and consideration for observation and repeat examination for disease progression
- Whenever the diagnosis is in question, **serial examination** as an inpatient in an observation unit or in the ED is a sound strategy

What clinical and laboratory parameters determine significant intra abdominal pathology for patients assessed in hospital with acute abdominal pain?

Saleh M Abbas*¹, Troy Smithers² and Etienne Truter²

Table 1: Surgical causes of pain

Diagnosis	Number of patients
Acute appendicitis	36
Biliary colic	9
Cholecystitis (normal liver function test)	12
Diverticulitis	14
Probable Sub-acute small bowel obstruction (minimal X rays findings)	7
Colon cancer	4
Peptic ulcer disease	6
Pancreatitis with normal amylase	3

Conclusion: Patients with no vomiting, no guarding, who have normal pulse rates and normal white cell counts are unlikely to have significant pathology requiring further active intervention either medical or surgical.

When “everything seems fine”... DISCHARGE

- Instructions to **RETURN IF** the pain worsens, new vomiting or fever occurs, or if the pain persists beyond 8–12 hours
- Such instructions are targeted at ensuring the return of **a patient who has progressed** from an early appendicitis or small bowel obstruction

First Aid

- Primary Survey – **ABCs**
 - Ensure optimal **DO2** ... adequate **resuscitation**
- Early identification of Sepsis ... or even worse, **Septic Shock**
- Obtain **Informed Consent**
- **No Analgesic until diagnosis is made ???**

“Analgesia should not be given to patients with an acute abdomen because it obscures the diagnosis”

Myth or Reality ?

Table. Comparison of major outcomes between reviewed trials of pain control in patients with abdominal pain.

Study	(n) Intervention (Dose)	(n) Control	Changes in Physical Examination Result	Errors in Decisionmaking	Incorrect Diagnosis	Morbidity	Accurate Management Decisions
LoVecchi et al	(32) Morphine (5-10 mg)	(16) Normal saline solution	8.00 (1.16-55.07)	Not estimable	1.50 (0.17-13.30)		Not estimable
Pace et al	(35) Morphine (10 mg)	(36) Normal saline solution	0.34 (0.01-8.14)		0.51 (0.24-1.12)	5.14 (0.26-3.37)	
Thomas et al	(38) Morphine (15 mg)	(36) Normal saline solution	1.02 (0.56-1.87)		1.11 (0.59-2.06)		
Mahadeva et al	(33) Tramadol (1 mg/kg)	(33) Normal saline solution	1.27 (0.68-2.38)				
Attard et al	(50) Papaveratum (20 mg)	(50) Normal saline solution		0.33 (0.07-1.57)	0.22 (0.05-0.98)	Not estimable	0.33 (0.07-1.57)
Vermeulen et al	(175) Morphine (10 mg)	(165) Normal saline solution		1.19 (0.63-2.27)	1.19 (0.63-2.27)	Not estimable	1.19 (0.63-2.27)

All data are RRs with 95% CIs.

RR=0.77;
95CI 0.23-2.54 RR=0.81
95CI 0.48-1.37

*the use of opioid analgesics significantly improves
comfort without compromising treatment decisions*

“Analgesia should not be given to patients with an acute abdomen because it obscures the diagnosis”

Myth or Reality ?

REVIEW ARTICLE

Treatment of acute abdominal pain in the emergency room: A systematic review of the literature

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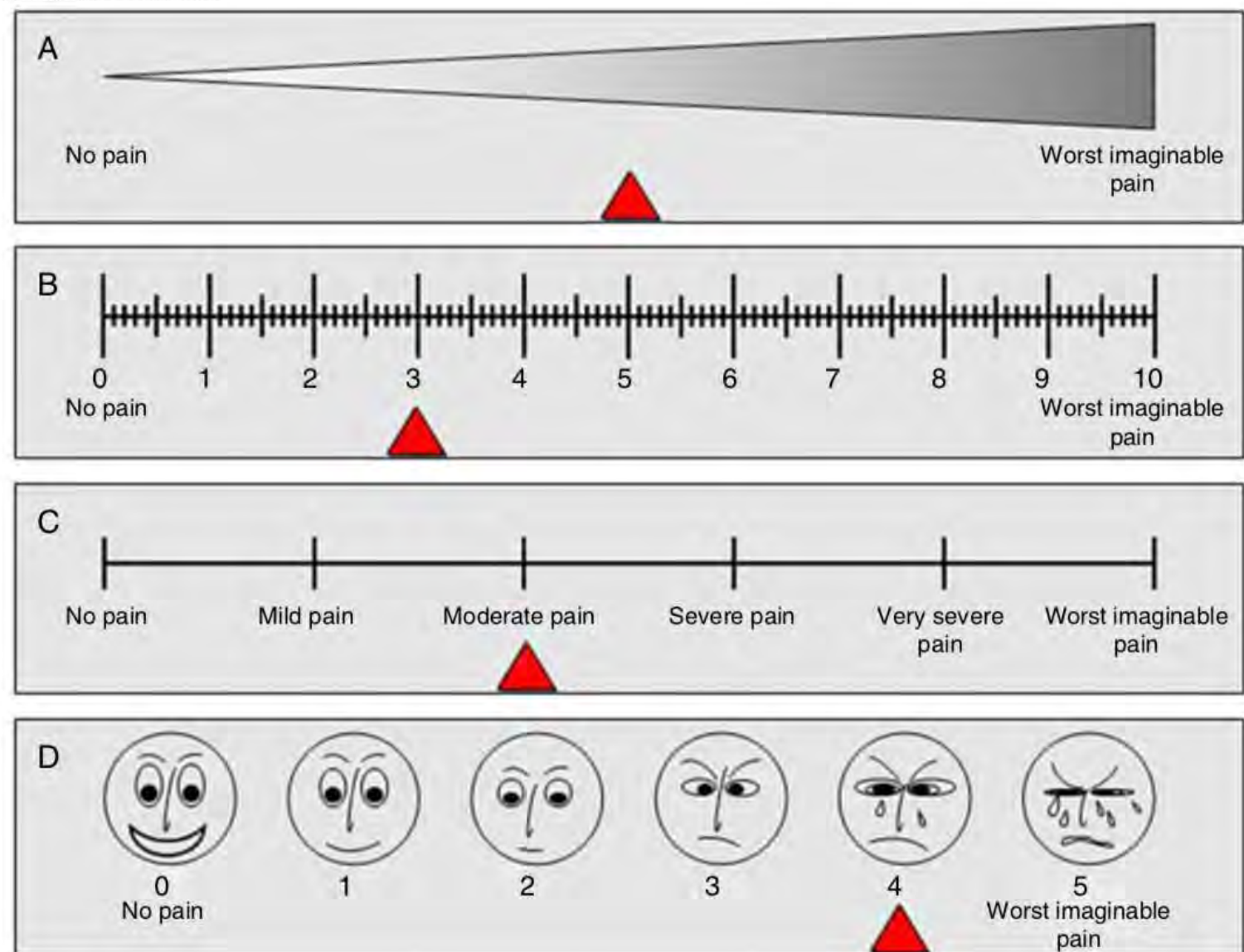


Figure 1 One-dimensional pain scales depicting examples of pain ratings. Pain is assigned to a range between 0 and 100 mm (VAS), a selection of possible answers (VRS), a numerical value between 0 and 10 (NRS), or a facial expression (SAS). (A) Visual analogue scale (VAS). (B) Numerical rating scale (NRS). (C) Verbal rating scale (VRS). (D) The 'Smiley' analogue scale (SAS).

Acute abdominal pain

Pain intensity measurement and clinical assessment

NRS 1–3 (mild pain)

NRS 4–5 (moderate pain)

NRS 6–7 (severe pain)

NRS ≥ 8 (extreme pain)

➤ 1 g paracetamol* i.v. as a short infusion over 15 min

OR

➤ 1 g dipyron** i.v. as a short infusion over 15 min (preferable in colicky pain)

➤ 1 g paracetamol* i.v. as a short infusion over 15 min

OR

➤ 2.5 g dipyron** i.v. as a short infusion over 15 min (preferable in colicky pain)

➤ Consider adding 3.75–7.5 mg piritramide*** i.v. as a short infusion over 15 min

➤ 1 g paracetamol* i.v. as a short infusion over 15 min

AND

➤ 7.5 mg piritramide** i.v. as a short infusion over 15 min

OR

➤ 2.5 g dipyron** i.v. as a short infusion over 15 min (preferable in colicky pain)

AND

➤ 7.5 mg piritramide*** i.v. as a short infusion over 15 min

Try:

➤ 1 g paracetamol* i.v. as a short infusion over 15 min

AND

➤ 7.5–15.0 mg piritramide i.v. as a short infusion over 15 min

OR

➤ 2.5 g dipyron i.v. as a short infusion over 15 min (preferable in colicky pain)

AND

➤ 7.5–15 mg piritramide i.v. as a short infusion over 15 min

OR

➤ Titration with repeated administration of 3.75 mg piritramide i.v.

➤ Consultation with anesthesiologist

Supplements: For colicky pain consider 20 mg butylscopolamine bromide slowly i.v.

➤ Repeat clinical examination if not possible before pain treatment

➤ Repetition of pain measurement after 15 min for piritramide and 30 min for paracetamol and dipyron → Modification of pain therapy following algorithm

Role of ED Physician

- First Aid and Early Consultation



- Intervene when necessary
Immediately lethal problems
“too sick” patients
Remote areas

“too sick” patients

- Severe sepsis ... **Septic Shock**
 - **Comorbidities**, especially in elderly
 - Cardio-Pulmonary
 - Metabolic
 - Kidney Failure
- Increased Mortality**

No such thing as “**Perbaikan KU**”

instead ... we should do

Optimalization (with targets) !!!

The Acute Abdomen Decision Making course for the initial management of non traumatic acute abdomen: A proposition of the World Society of Emergency Surgeons

Belinda De Simone,¹ Luca Ansaloni,² Massimo Sartelli,³ Federico Coccolini,² Ciro Paolillo,⁴ Massimo Valentino,⁵ Giorgio Ricci,⁶ Fausto Catena¹

¹Department of Emergency and Trauma Surgery, University Hospital of Parma, Parma; ²Department of Emergency and Trauma Surgery, Bufalini Hospital, Cesena; ³Department of General Surgery, Macerata Hospital, Macerata; ⁴Emergency Department, Brescia Ospedale Riuniti, Brescia; ⁵Radiology Unit, Department of Emergency, Parma University Hospital, Parma; ⁶Emergency Department, Verona Hospital, Verona, Italy

A - Anamnesis	Collect an effective medical history using multiple choice forms and pain control
B - Body Examination	Doing a standardized patient exam, filling the abdominal pain and peritonism map and score
C - Clinical Ultrasound	Doing an office ultrasound to evaluate aorta, gallbladder, bladder, kidney
D - Do or not	Do or not Laboratory Tests and insert or not foley catheter and/or nasogastric tube
E - Evaluate your working diagnosis	Evaluate your working diagnosis (consider age and sex)
F - Follow guidelines or follow up	Follow guidelines according your working diagnosis, and follow-up the case if diagnosis is unclear

Key for the “best” outcome

*Operate only when necessary and
... do the minimum possible*

*Do not delay a necessary operation and
... do the maximum when indicated*

When in Doubt.. There is No Doubt..

Do Something !!!

Surgeon – Exploratory Laparotomy ?

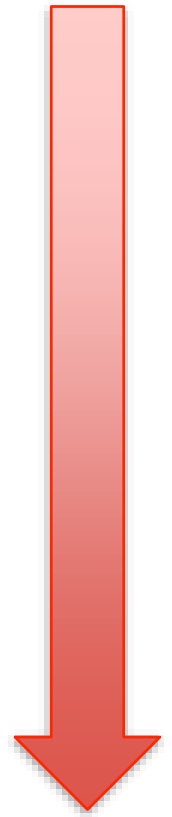
ED Physician – Consult !!!

When dealing with surgical case ...



Is It ?

1. Surgical Case ?
2. Need Surgery ?
3. Elective or Emergency ?
4. Fit for surgery ?
5. Intraoperative ?
6. Post Operative ?
7. Rehabilitation ?



When to Refer and How ?

A risk management approach

- Elderly — greater care and clinical suspicion of severe disease
- Assume every woman of childbearing age is pregnant
- Evaluate extra-abdominal cause
- Avoid relying only on laboratory findings
- Analgesia is always appropriate
- Always address abnormal vital signs
- Abdominal pain is a high-risk presentation, avoid poor **documentation**
- Provide good discharge advice, and **document** it

Summary

- Acute abdomen is a **surgical emergency**, until proven otherwise
- Early recognition of specific **clinical pattern** is essential in the diagnosis of acute abdomen, which will mandate the appropriate treatment
- First aids including adequate resuscitation and early recognition of sepsis
- Don't forget Informed Consent, Documentation, Discharge Advice

THANK YOU

