On-Call CTSP Scenarios

Duke-NUS ZOOM tutorials

Nigel Fong

30 March 2020

The Tao of Bao: A Randomised Controlled Trial Examining the Effect of Steamed Bun Consumption on Night-Call Inpatient Course and Mortality

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Abstract

Background: Medical superstitions remain prevalent in today's stressful and technology driven healthcare environment. These irrational beliefs commonly involve night calls, which are periods of volatile workload. In Singapore and Hong Kong, it is commonly held that consumption of steamed buns ("bao") by on-call physicians is associated with increased patient admissions and mortality, due to a homonymous interpretation of the word "bao" in dialect. Materials and Methods: A prospective unblinded randomised controlled trial with a permuted block randomisation design was performed on weekdays over 6 weeks. Steamed buns or control food were offered to the internal medicine night-call team of a tertiary-care hospital on a nightly basis. Information on admissions and mortality was collected from the hospital electronic database. Data on sleep patterns and shift duration were obtained by interview. Results: There were no significant differences in the median number of hours slept on days on "bao" administration versus "control" intervention (2 ± median absolute variation of 1.5 h vs 2 ± 1.5 h, $P = 0.30$) or in the number of hours spent in the hospital (30.8 ± 1.9 h vs 30.5 ± 2.2 h, $P = 0.09$). There were no significant differences in the median number of general ward admissions per night (n = 73 ± 6 versus 71 ± 7 admissions, $P = 0.35$), monitored care unit admissions (4 ± 1.5 vs 4 ± 1.5 admissions, $P = 0.65$) or inpatient mortality (2 ± 1.5 vs 2 ± 1.5 deaths per night, $P = 0.47$). Conclusion: The consumption of steamed buns ("bao") has no effect on inpatient admissions, mortality, or sleep duration on call. Regardless, our results indicate that the night call in Singapore remains a challenge in terms of workload and shift duration.

Ann Acad Med Singapore 2008;37:255-7

General advice for night calls

- Challenging but good learning value – first time on your own
- Scope of duties: New cases (active) + CTSPs (passive)
  - Clerk fully, not ‘pre-clerk’, not copy ED notes.
  - Remember to check NEHR and order old meds
  - Think, not just do.
- Managing workload
  - Prioritization
  - Spend time where it counts
  - Work with your MO - but take ownership of the call

Philosophy of CTSP

	Critical	Important	Low priority
Examples	Collapse Low BP Desaturation	Fever (normal BP) Chest pain NPU x 8 hours Abnormal lab result	Hypocount = 18 Patient didn't BO Patient wants panadol Family wants update
Goal	Resuscitate	Appropriate management	Don't waste time

Philosophy of CTSP

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Goal	Resuscitate	Appropriate management	Don't waste time
Strategy	Check resus status Support physiology Call MO early Escalate to HD/ICU Inform family	Assess patient Think of ddx Initial inx (and trace) Appropriate management Monitor for deterioration	Ensure no emergency Handle remotely if possible Leave to primary team next day.

Philosophy of CTSP

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Goal	Resuscitate	Appropriate management	Don't waste time
Strategy	Check resus status Support physiology Call MO early Escalate to HD/ICU Inform family	Assess patient Think of ddx Initial inx (and trace) Appropriate management Monitor for deterioration	Ensure no emergency Handle remotely if possible Leave to primary team next day.
Pitfall	Know when *not* to resuscitate and DNR instead!	Missing the sick patient.	Traps – e.g. if patient wants panadol, assess first if unusual or severe pain

Today

- Abdominal pain
- Hyperkalemia
- Delirium

Tomorrow

- Chest pain
- Desaturation
- Hypotension
- Fever

CTSP 1

1

"Doctor, patient is back from ERCP, please do post procedure review"

Questions

1. What is the purpose of a 'post procedure review'?

2. What do you need to do?

Breakout groups: Discuss & Present

"Doctor, patient is back from ERCP, please do post procedure review"

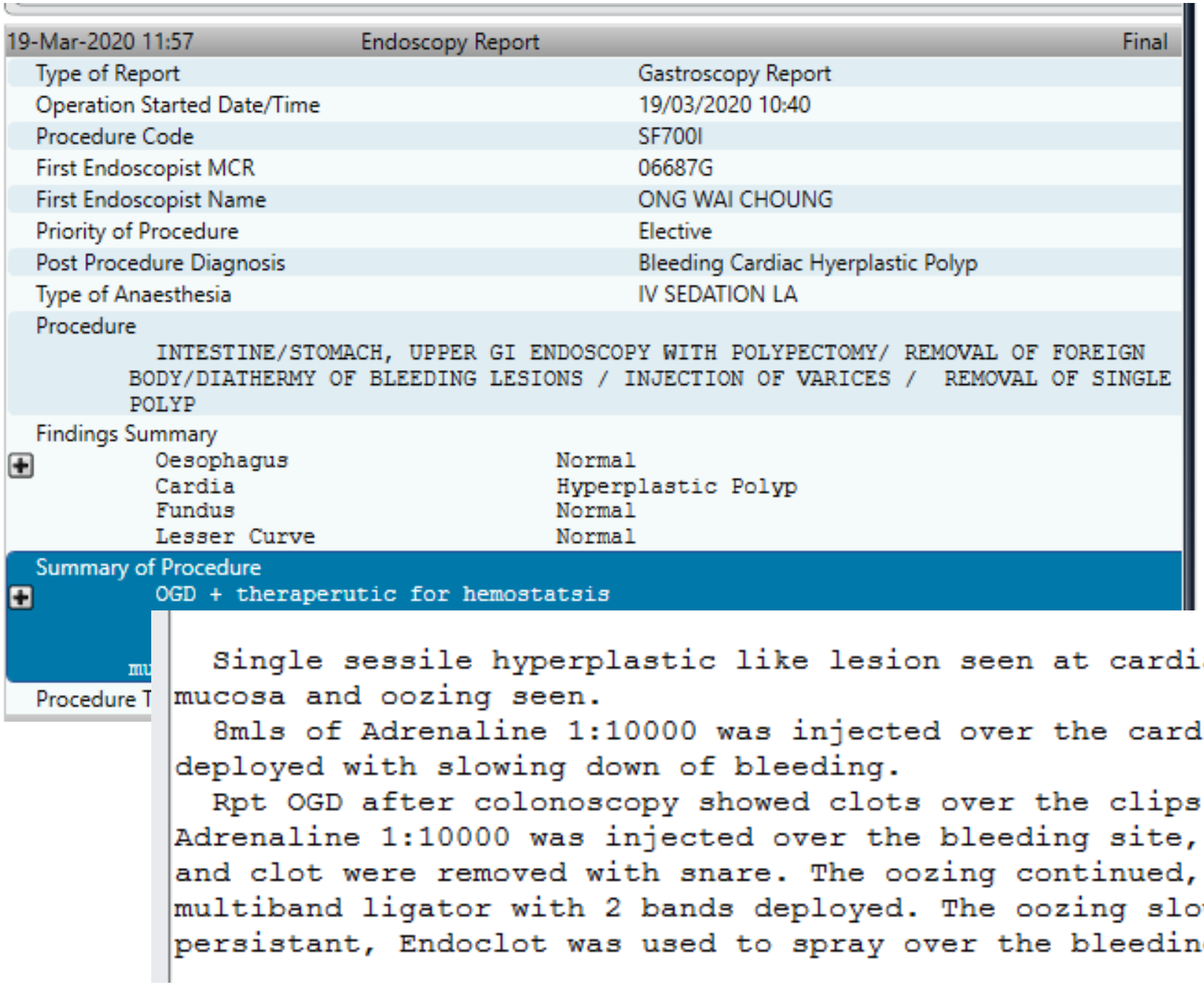
1. Understand the procedure

- Indication & background
- Procedure & any intra-procedural events (read the op notes, anaesthesia notes)
- Check procedurist's instructions

2. Review patient

- Ensure no immediate complication
- Transit to usual management (e.g. diet, monitoring, meds, etc)
- Act on any procedural findings & instructions

Importance of reading op/scope notes



19-Mar-2020 11:57	Endoscopy Report	Final
Type of Report	Gastroscopy Report	
Operation Started Date/Time	19/03/2020 10:40	
Procedure Code	SF700I	
First Endoscopist MCR	06687G	
First Endoscopist Name	ONG WAI CHOUNG	
Priority of Procedure	Elective	
Post Procedure Diagnosis	Bleeding Cardiac Hyerplastic Polyp	
Type of Anaesthesia	IV SEDATION LA	
Procedure	INTESTINE/STOMACH, UPPER GI ENDOSCOPY WITH POLYPECTOMY/ REMOVAL OF FOREIGN BODY/DIATHERMY OF BLEEDING LESIONS / INJECTION OF VARICES / REMOVAL OF SINGLE POLYP	
Findings Summary		
	Oesophagus	Normal
	Cardia	Hyperplastic Polyp
	Fundus	Normal
	Lesser Curve	Normal
Summary of Procedure		
	OGD + theraperutic for hemostatsis	

Procedure T

Single sessile hyperplastic like lesion seen at cardiac region, with friable mucosa and oozing seen.

8mls of Adrenaline 1:10000 was injected over the cardia region, three hemoclips deployed with slowing down of bleeding.

Rpt OGD after colonoscopy showed clots over the clips. Further 17mls of Adrenaline 1:10000 was injected over the bleeding site, the existing hemoclips and clot were removed with snare. The oozing continued, decesion made to use multiband ligator with 2 bands deployed. The oozing slowed down but still persistant, Endoclot was used to spray over the bleeding site with clot seen.

Anaesthesia charts

SGH

Anaesthesia Report

Page 1 of 1

[redacted]

IV ACCESS
14:23 IV Forearm Right 22 g

INDUCTION

REGIONAL ANAESTHESIA
14:26 Upper Limbs, Left, Brachial Plexus - Axillary, supine, Sterile prep., gloves, drape, SonoPlex Stim, 22 g, LAHo-skin, UlSound.
Comments:
* Regional TimeOut, Witnessed by Dr. Janice Lim Wan Lin
* Nil Blood Aspirated
* Nil Paraesthesias or Immediate Complication
* In plane block
* Performed by - Koh Li Ying

EQUIPMENT
14:25 AN Machine –> GE Aestiva, Monitoring –> Sets, Regional - 3 lead ECG, NIBP, SpO2

AIRWAY

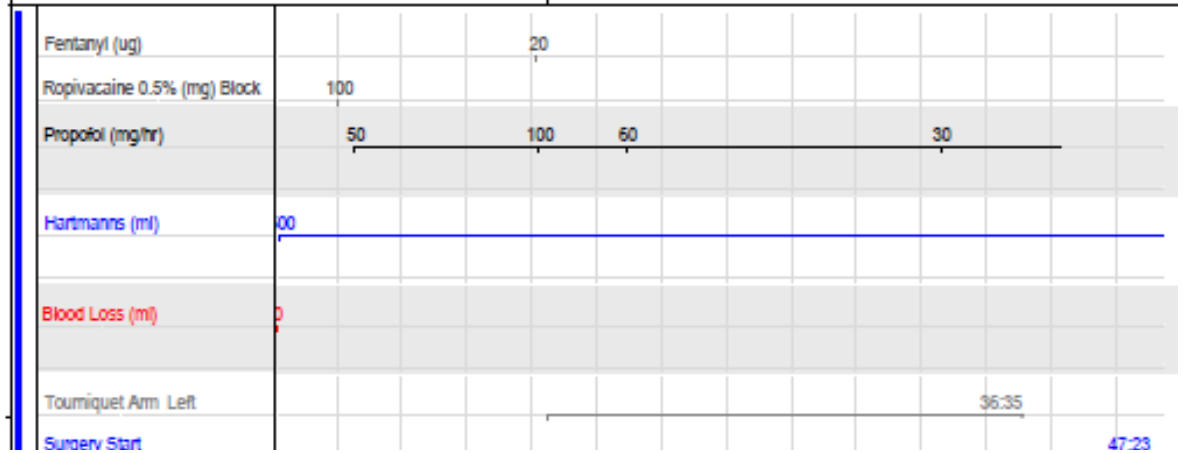
LARYNG VIEW

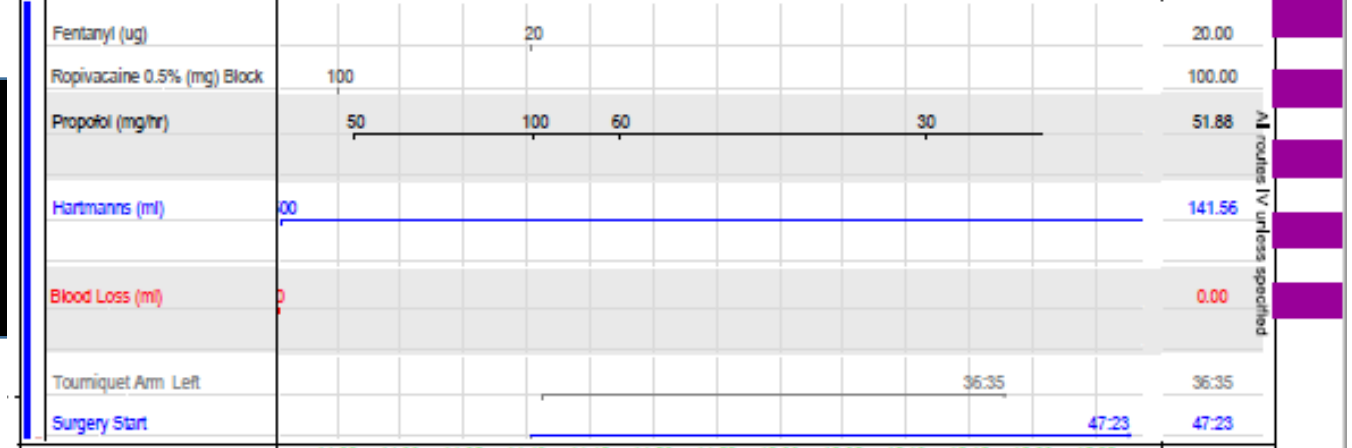
POSITION

CIRCUIT

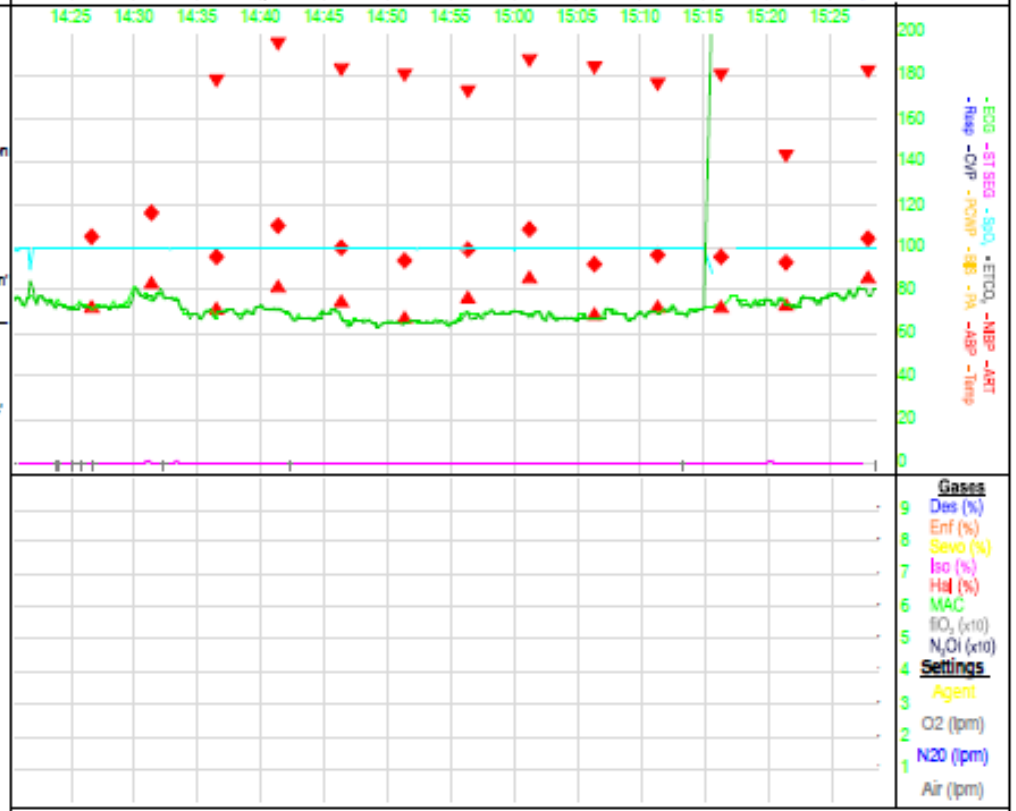
BLOOD GAS

VENTILATION





14:20 Entered Theatre
14:23 Start Anaesthesia
14:25 Block - Upper Limbs
14:25 Patient Protection: Left arm on armboard, right arm on side of patient, protected, Position Supine
14:26 BP right calf
14:32 ABP not required - No - operation does not need antibiotics
14:42 Knife to Skin
15:13 Signoff: Koh Li Ying
15:28 Patient left Theatre
___DISCARDED NARCOTICS___
20/03/2020
* 'Koh Li Ying', 'Dr. Janice Lim Wan Lin'
15:13 Fentanyl 80(ug)
___STAFFING___
14:20 Anaes (principal): 'Koh Li Ying' assigned.
14:20 Anaes (associate): 'Dr. Janice Lim Wan Lin' assigned.
14:20 Surgeon (principal): 'KANG Y C' assigned.



POST-OP ORDERS
AIRWAY THERAPY: Keep SpO2% > 95
IV: Hartmanns
DISCHARGE INSTRUCTIONS: Prop Up Patient in Bed/ Trolley

NAME: Koh Li Ying

SIGN: Signed electronically. No signature is required.

Report Created: 20/03/2020 15:28:52

ANAESTHETIC

MR G/10

7867J

2

Mr See B. D. has a head-of-pancreas CA with biliary obstruction
Elective admission for ERCP and biliary stenting.
Post-procedure, complains of abdominal pain

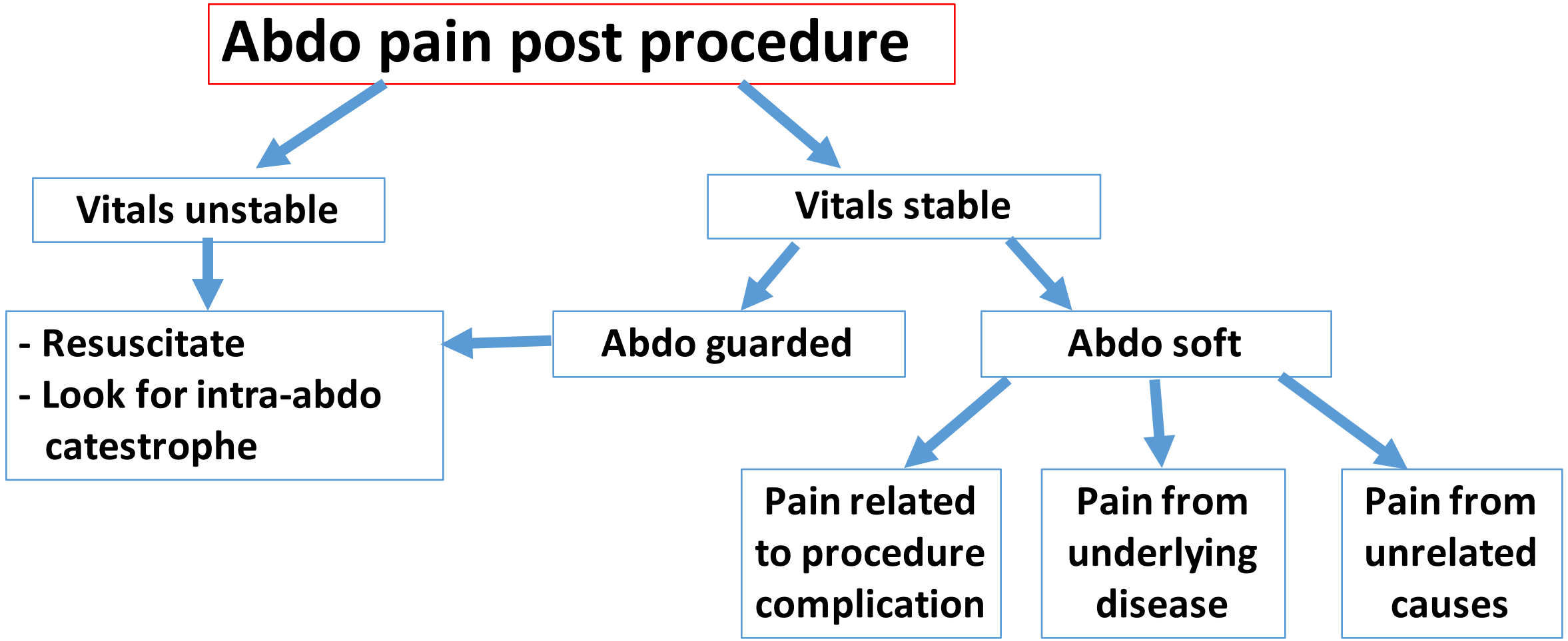
Questions

3. What are your thoughts?

4. What will you do?

Individual: Pen your thoughts

Mr See B. D. has a head-of-pancreas CA with biliary obstruction
Elective admission for ERCP and biliary stenting.
Post-procedure, complains of abdominal pain



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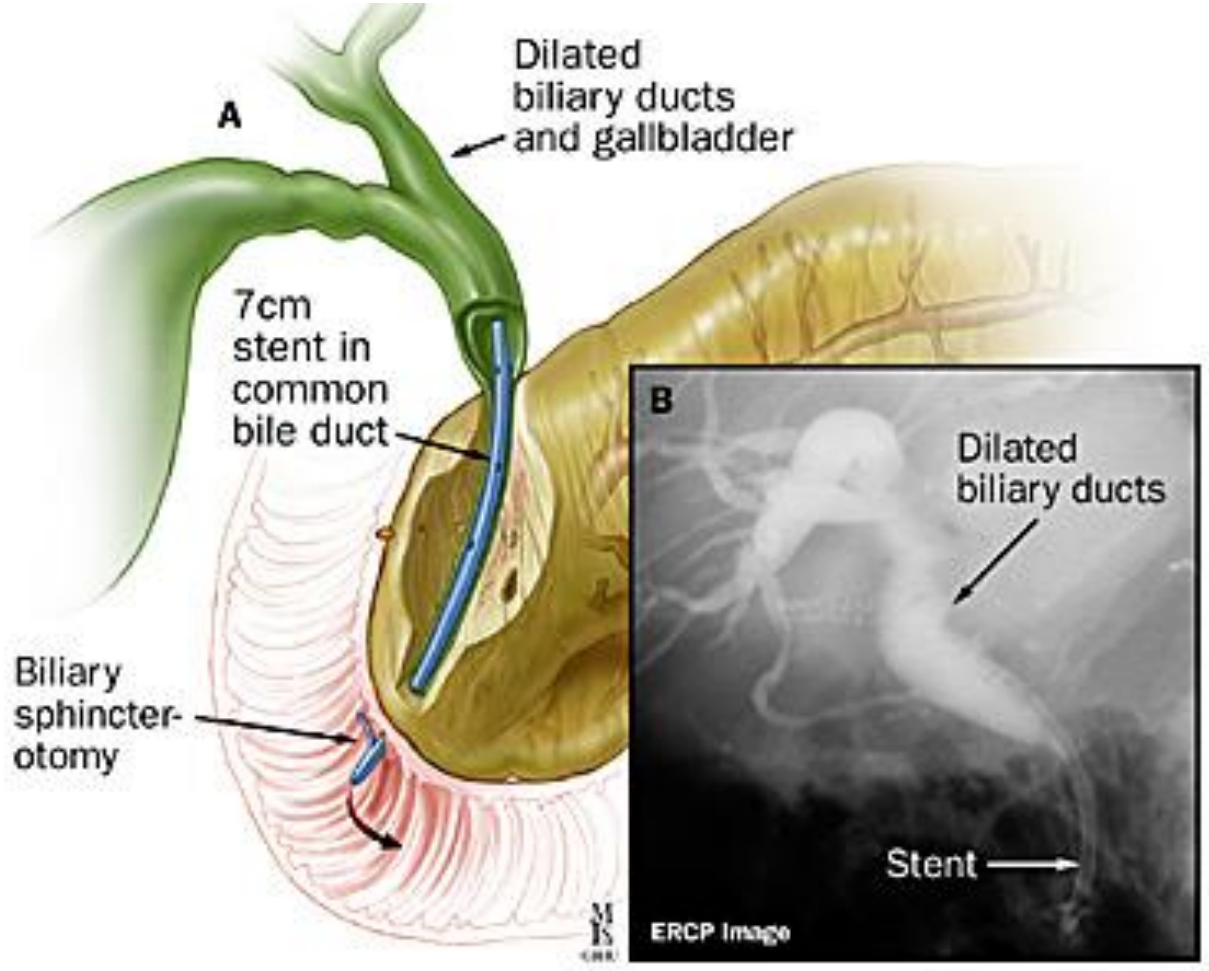

What can go wrong?

Mr See B. D. has a head-of-pancreas CA with biliary obstruction
Elective admission for ERCP and biliary stenting.
Post-procedure, complains of abdominal pain

Differential	What fits	What doesn't	What else do I need to do
Perforation	Acute, sudden-onset.	Abdomen soft	Erect CXR
Pancreatitis	Abdomen soft Pain radiating to back		Check amylase, lipase If confirmed – severity scoring, look for complications Mx is supportive
Cholangitis	RHC pain	No fever	Septic workup, blood culture Broad spectrum Abx if suspected
Pain from underlying tumor	Known tumour pain on home morphine.	Why is worse now?	Rule out more dangerous causes first. Analgesia
Others – e.g. DKA, AMI			Investigate for cause

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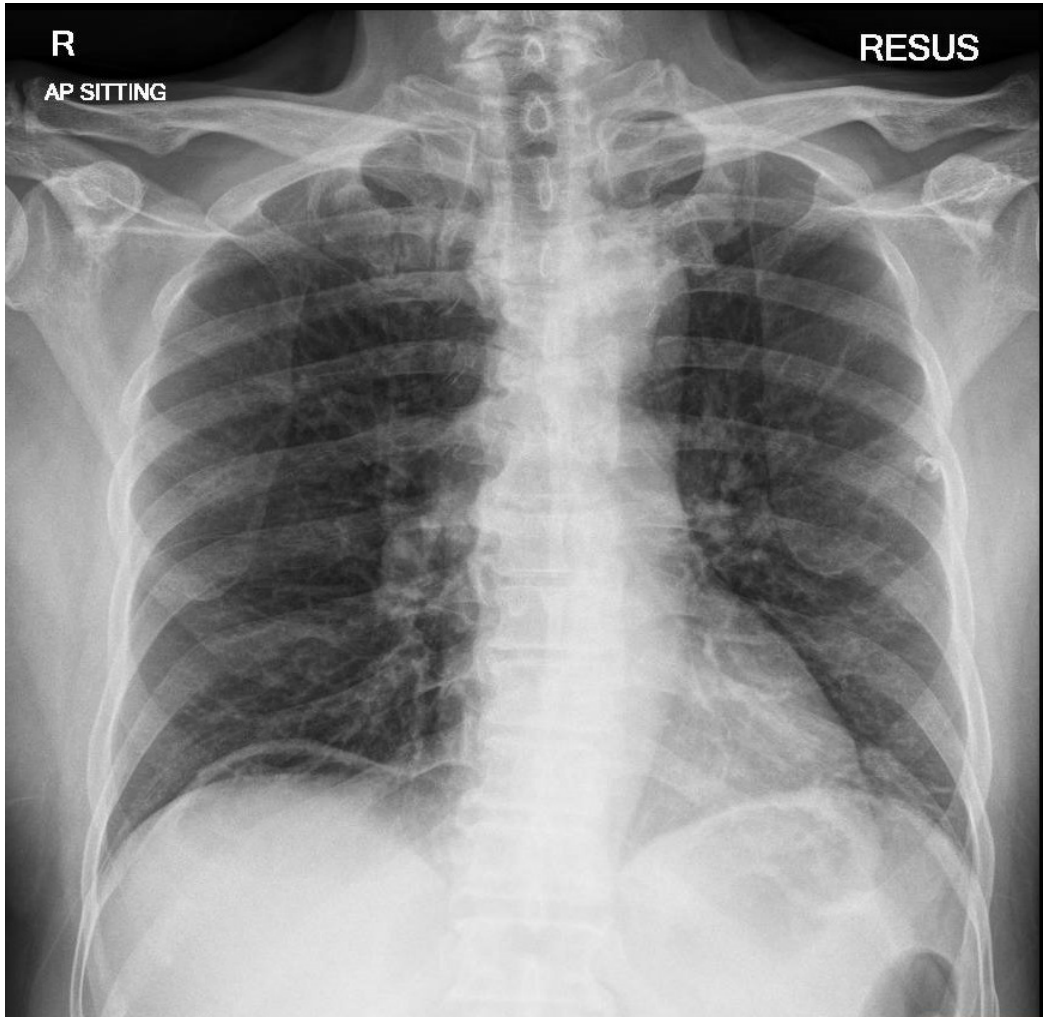

What are your plans?

Another scenario

New admission

52/M, ESRF on PD, IHD, DM, HTN, AF.
c/o 3/7 abdo pain + vomit + diarrhea.

T 38, BP 90/60, HR 102, SpO2 96 RA
GC lethargic
H s1s2, L clear, A Soft
Bilateral pedal edema.

Hb 10.2 (baseline), TW 15, Plt 142
Cr 521, Na 140, K 2.9, Cl 100, Bicarb 8
Lactate 6, Ketones 1, Glucose 8.0

Impression

GE with dehydration

Plan (from HO)

Paras q4h, H/C TDS + 10pm, chart I/O
IV N/S 500ml
Replace K.
Maxolon, Buscopan, Lomotil.

Q: Comment on the above HO's management plan

Breakout groups: Discuss & Present

Another scenario

New admission

52/M, ESRF on **PD**, IHD, DM, HTN, **AF**.
c/o 3/7 abdo pain + vomit + diarrhea.

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Hb 10.2 (baseline), TW 15, Plt 142
Cr 521, Na 140, K 2.9, Cl 100, **Bicarb 8**
Lactate 6, Ketones 1, Glucose 8.0

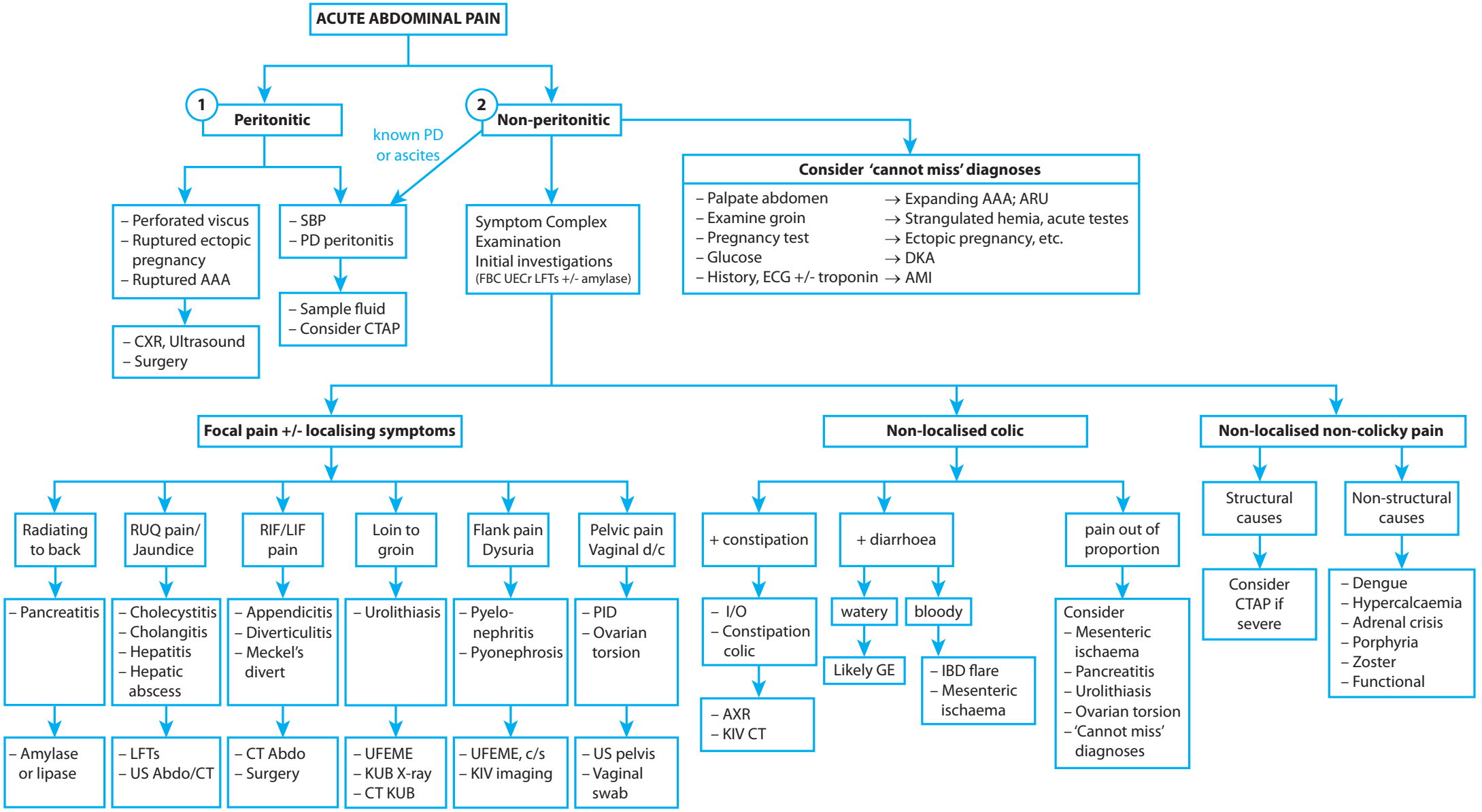
Red Flags

- PD + Abdominal pain
- Known HTN but BP 90/60
- Severe acidosis
- Raised lactate = severe sepsis or mesenteric ischemia

What must be done

- PD cell count + c/s (call PD nurse)
- Septic workup
- Urgent broad spectrum Abx
- Kiv CTMA
- Monitor very closely

Lesson:
Recognize when a patient is sick!



AAA, abdominal aortic aneurysm; AMI, acute myocardial infarction; ARU, acute retention of urine; DKA, diabetic ketoacidosis; GE, gastroenteritis; IBD, inflammatory bowel disease; I/O, intestinal obstruction; LIF, left iliac fossa; PID, pelvic inflammatory disease; RIF, right iliac fossa; RUQ, right upper quadrant.

Figure 9.1. Approach to acute abdominal pain by symptom complex.

CTSP 2

4

"Doctor, got critical lab result, potassium is 6.6"

Questions

1. How urgent is this?
2. What is your approach?
3. Can you ask the nurse to help you with anything before you reach?

Breakout groups: Discuss & Present

5

Mdm Siao Zhar Boh, 62/F admitted 4/7 ago for infected DM foot

PMHx

Diabetes
Hypertension
Hyperlipidaemia
Diabetic retinopathy s/p photocoagulation
Ray amputation left 2nd toe for wet gangrene.
Peripheral vascular disease

Meds List

IV Premix (NaCl 0.45%, K 40mmol/L)	
IV Augmentin	1.2g q8h
IV Cloxacillin	500mg QDS
IV Gentamicin	100mg BD
SC Insulin glargine	30U ON
PO Diclofenac	75mg BD
PO Paracetamol	1g QDS
PO Enalapril	20mg BD
PO Metformin	850mg BD
PO Glipizide	10mg BD
PO Bisoprolol	5mg BD
PO Simvastatin	20mg BD

Labs

Urea	16.2 mmol/L
Sodium	136 mmol/L
Potassium	6.6 mmol/L
Creatinine	214 µmol/L (baseline: 102)
Bicarbonate	12 mmol/L
Chloride	98 mmol/L

I/O Chart

4 days ago	In: 850ml	Out: 2200ml
3 days ago	In: 1020ml	Out: 1700ml
Yesterday	In: 995 ml	Out: 1040ml
Today	In: 720ml	Out: 100 ml

Individual task:
Write out your management plan as if in the clerking note

Mdm Siao Zhar Boh, 62/F admitted 4/7 ago for infected DM foot

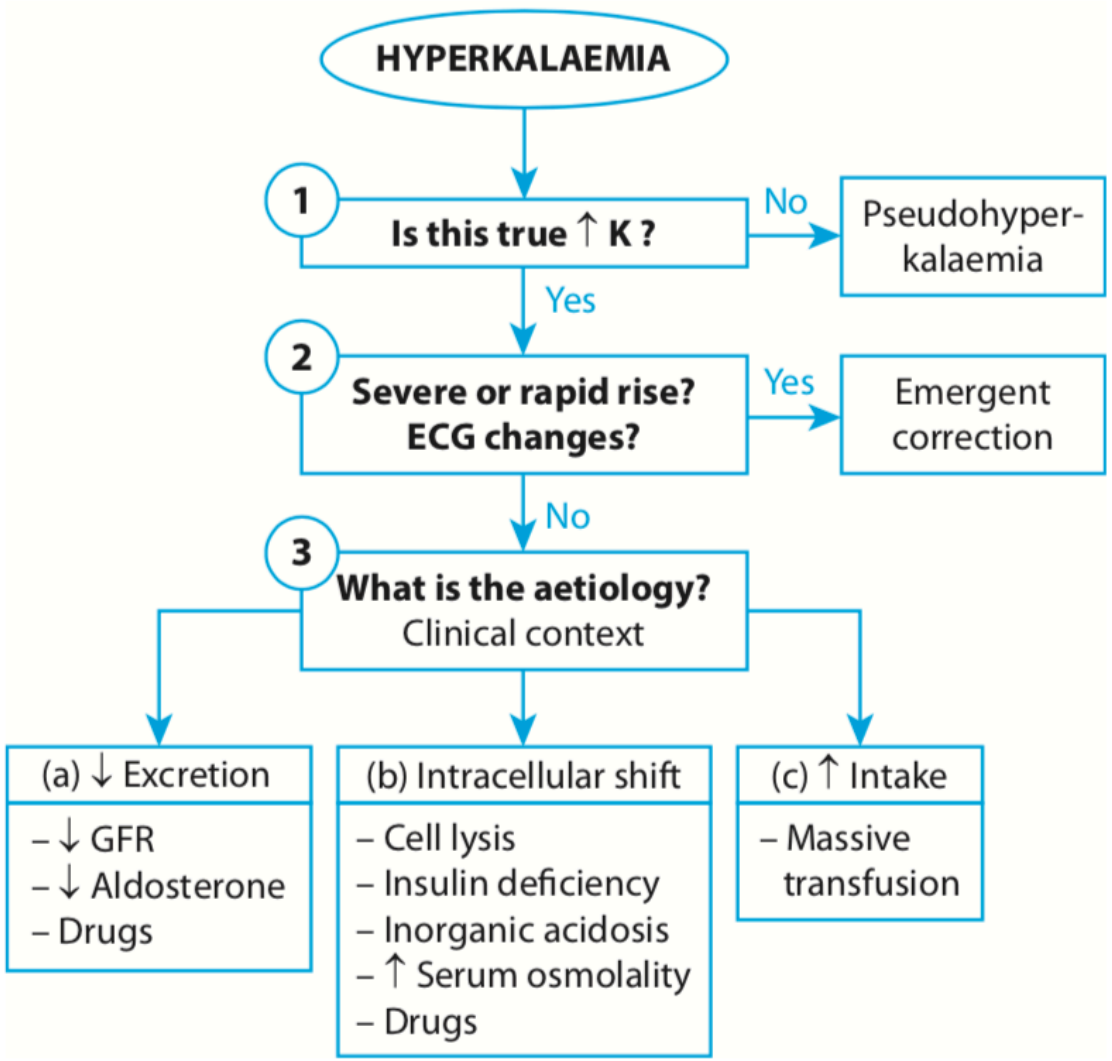


Figure 17.2. Approach to hyperkalaemia.

‘Hyperkalaemia kit’

- ECG
- Baseline capillary glucose
- Insulin (actrapid) 10U + dextrose 40-50ml
- 10% Calcium gluconate 10ml/10min
- Consider sodium bicarbonate if associated with severe acidosis
- Consider nebulized Salbutamol 5mg in 3-4ml saline over 10 minutes
- Resonium 15-30 g Q4-6H

Which Insulin?

A

B

C

Which syringe?

1

2

3

Poll

Giving hyperkalaemia kit

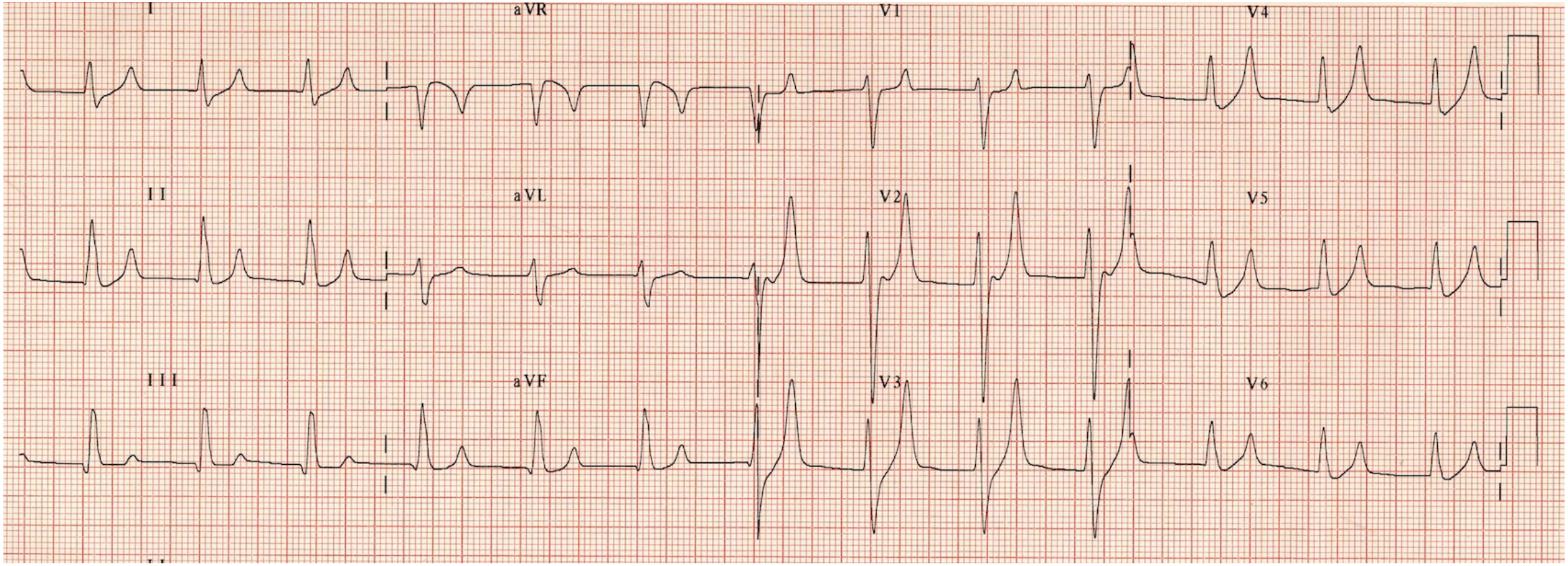
- Flush plug
- Draw up 40ml dextrose in 2x 25ml syringe.
- Choose insulin syringe
- Inject air into insulin bottle
- Invert and draw 10 units (0.1ml)
- Inject into dextrose syringe
- Connect dextrose syringe to plug and give as slow bolus (syringe without insulin first)
- Flush plug

Subsequent management

- What is the cause of AKI?
  - Note baseline Cr was normal
  - Note negative I/O balance - likely prerenal AKI - cautiously hydrate patient.
  - Ask about recent scans > CT arteriogram (contrast) was performed 2 days ago
  - Examine for palpable bladder
- Stop medications that can cause nephrotoxicity and hyperkalaemia (important to always look at drugs in worklist manager)
  - ACE-I, gentamicin, NSAID, IV fluid with K.
  - Suspend metformin
- Review plan: monitor CBG, ECG, UECr

6

You review the patient 4h later and note that K is now 7.2 mmol/L. Cr is 280 mmol/L. Glucose is 7 mmol/L. HCO3- is 11.3. The patient appears to be having labored breathing with an RR of 24.



Breakout groups: Discuss - What is the next step?

You review the patient 4h later and note that K is now 7.2 mmol/L. Cr is 280 mmol/L. Glucose is 7 mmol/L. HCO3- is 11.3. The patient appears to be having labored breathing with an RR of 24.

S	I have a patient with AKI and hyperK. K has climbed from 6.8 to 7.2 despite 1 cycle of insulin/dextrose, we have just commenced another cycle; Cr has climbed from 214 to 280, bicarb is 16.2 and the patient is anuric in the last 5 hours despite hydration. The patient is lethargic and tachypenic.
B	This is a 62 year old lady admitted for sepsis secondary to infected diabetic foot ulcer. Her I/O has been negative for the last 4 days and she has had multiple nephrotoxic drugs and contrasted CT scan
A	My patient has failed medical therapy for hyperkalemia, is symptomatic and has evidence of acidosis.
R	I would like to refer this patient for urgent dialysis.

CTSP 3

"Doctor, patient drowsy, can you come see?"

What are your thoughts if…

1. 88/F known dementia, trying to climb out of bed
2. 47/M admitted 3 days ago for alcoholic pancreatitis
3. 25/M admitted 4h ago for fever + rash
4. 70/F admitted for community acquired pneumonia
5. 35/M foreigner admitted for rhabdomyolysis after collapsing at marathon.

Breakout groups: Discuss - What is the next step?

AMS is challenging

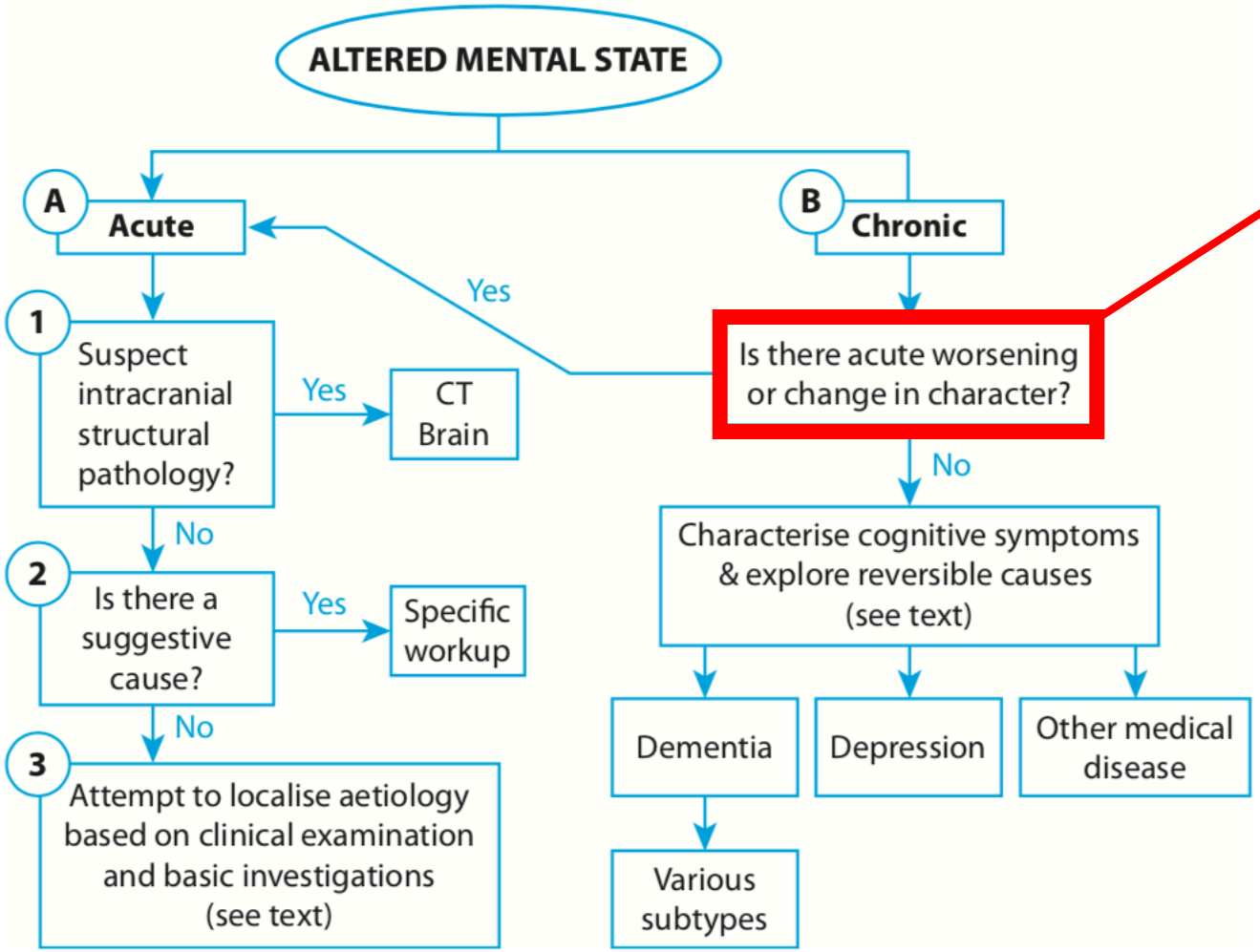


Figure 31.1. Approach to altered mental state.

Table 6: Confusion Assessment Method (CAM) Diagnostic Algorithm

1) Acute onset and fluctuating course
2) Inattention, distractibility
3) Disorganized thinking, illogical or unclear ideas
4) Alteration in consciousness

The diagnosis of delirium requires the presence of both features 1 AND 2, plus EITHER feature 3 or 4.

Adapted from: Inouye S, van Dyck C, Alessi C, et al: Clarifying confusion: The confusion assessment method. Ann Intern Med 113:941, 1990.

Delirium is challenging – often multifactorial

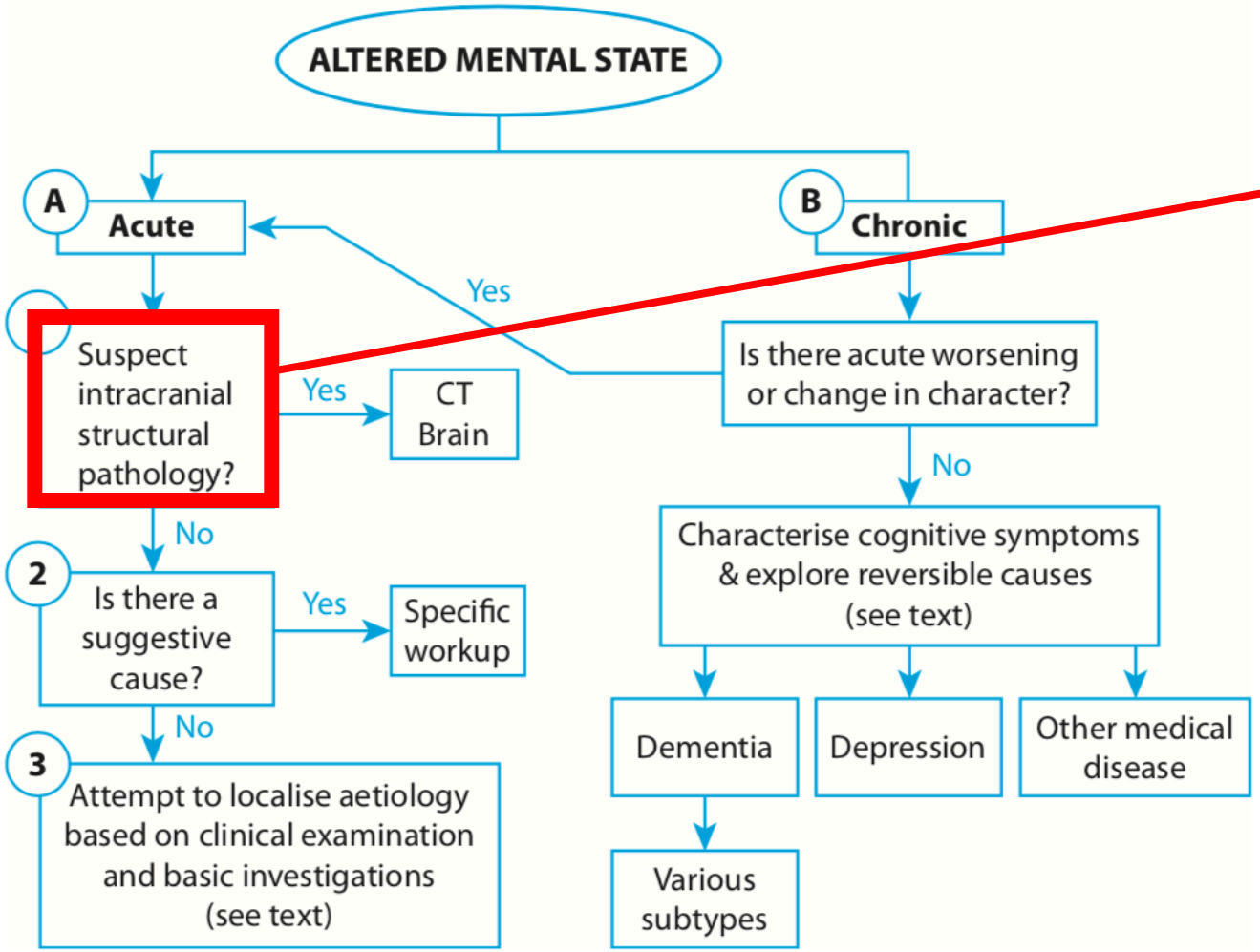


Figure 31.1. Approach to altered mental state.

When to suspect intracranial pathology?

- Focal neuro deficit
- Signs of raised ICP
- Headache, neck stiffness
- Hx of head trauma
- Very sudden onset
- Severe drowsiness
- Risk of ICH

Delirium is challenging – often multifactorial

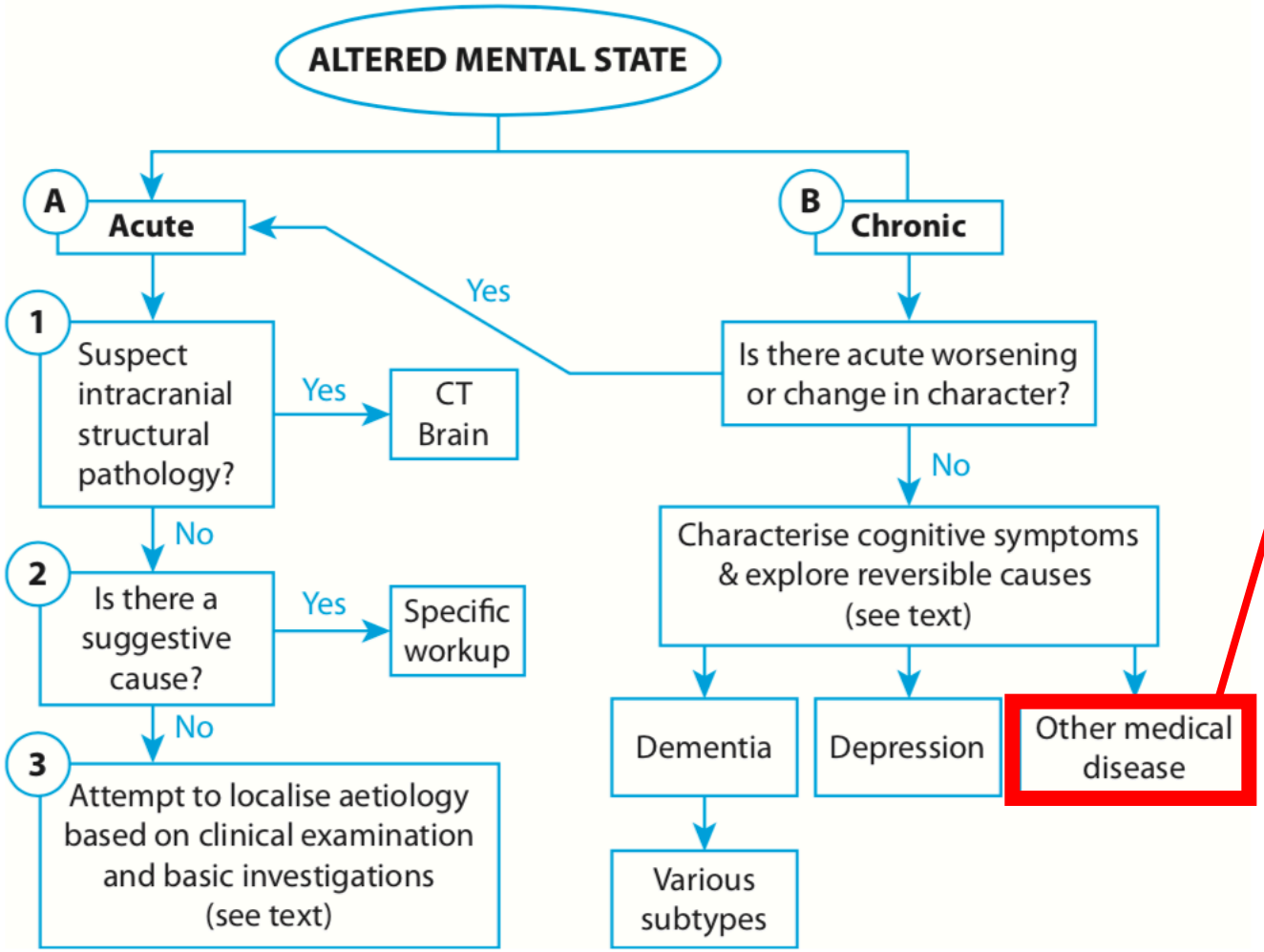


Figure 31.1. Approach to altered mental state.

Many medical causes

- Vascular
- Infective (sepsis, meningitis)
- Toxins
- Autoimmune
- Metabolic (electrolyte, O2, CO2, liver, kidneys, endocrine, heat)
- Ictal
- Nutritional
- Others e.g. pain, NBO

Good ddx = Good Inx = Good Mx

"Doctor, patient drowsy, can you come see?"

What are your thoughts if…

1. 88/F known dementia, trying to climb out of bed
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"Doctor, patient drowsy, can you come see?"

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4. 70/F admitted for community acquired pneumonia
5. 35/M foreigner admitted for rhabdomyolysis after collapsing at marathon.
6. **65/F admitted 4h ago for L MCA infarct s/p thrombolysis**

8

“Doctor, patient drowsy, can you come see?”

65/F known DM, HTN, HLD
Admitted for L MCA infarct (NIHSS 14)
Thrombolysis with rTPA administered 4h ago

What will you assess?

Admission CT brain

Breakout groups: Discuss & Present

9 “Doctor, patient drowsy, can you come see?”

65/F known DM, HTN, HLD
Admitted for L MCA infarct (NIHSS 14)
Thrombolysis with rTPA administered 24h ago

BP 180/105, HR 42, T afebrile, SpO2 96% RA
GCS E3V3M5 = 11 (was initially E4V5M5 = 14)

H s1s2
L clear
A SNT
Not moving right side (baseline)
Unable to follow commands.
Pupils equal reactive

Individual task:
Write out your management plan as if in the clerking note

"Doctor, patient drowsy, can you come see?"

65/F known **DM**, HTN, HLD
Admitted for **L MCA infarct** (NIHSS 14)
Thrombolysis with **rTPA** administered 24h ago

BP **180/105, HR 42**, T afebrile, SpO2 96% RA
GCS E3V3M5 = 11 (was initially E4V5M5 = 14)

H s1s2
L clear
A SNT
Not moving right side (baseline)
Unable to follow commands.

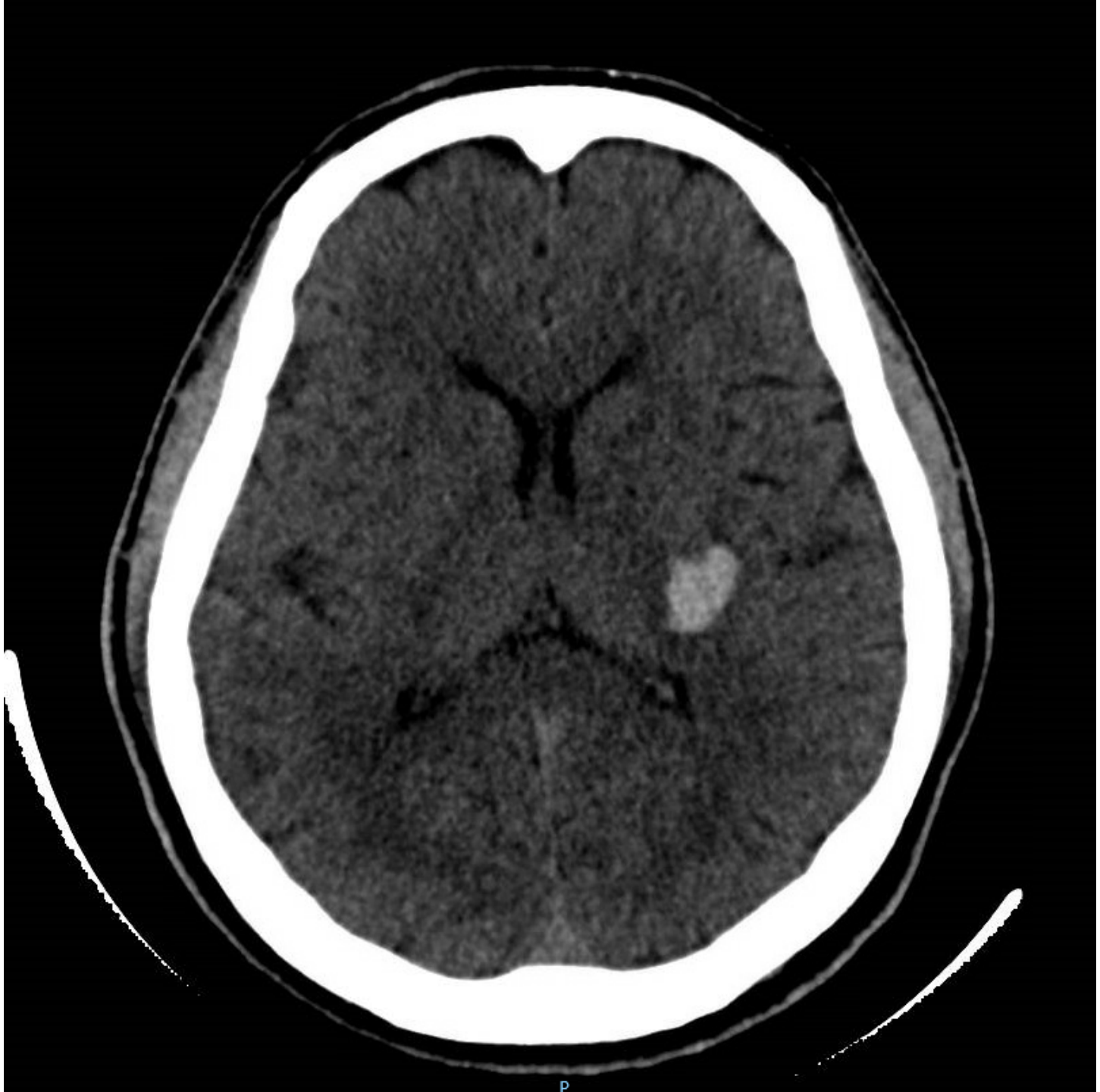
Hypoglycemia 2' NBM? Or HHS?

Infarct progression
Cerebral edema / Coning
Seizure
Aspiration- hypoxia (HAP: too early)

Haemorrhagic conversion
Systemic haemorrhage?

Cushing's Reflex?

NBM, Hourly paras, IDC
Check H/C, electrolytes, Hb
Seizure chart
Stat CT brain
Stop antiplatelets / anticoagulant



What is the next step?

"Doctor, patient drowsy, can you come see?"

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3. 25/M admitted 4h ago for fever + rash
4. 70/F admitted for community acquired pneumonia
5. 35/M foreigner admitted for rhabdomyolysis after collapsing at marathon.
6. 65/F admitted 4h ago for L MCA infarct s/p thrombolysis
7. **60/F known ovarian CA, admitted for chemo.**

Breakout groups: Discuss & Present

60/F known ovarian CA, admitted for chemo

Category	Cause	Important clinical features
Complications of treatment	Sepsis	Fever, localizing symptoms. Suspect neutropenia if: recent chemotherapy, cytopenias.
	Drug toxicity, especially opioids and chemotherapy.	Increase in opioid dose or decrease in renal clearance. Pin-point pupils, myoclonic jerks, decrease in respiratory rate.
Complications of disease	Electrolyte abnormality, especially ↓ Na^+, ↑ Ca^{2+}	Gastrointestinal or renal losses. HyperCa: ”moan stone bone groan”
	Dehydration Renal insufficiency	Poor oral intake, decreased urine output, nephrotoxic drugs, peritoneal metastases (post-renal obstruction)
	Hepatic encephalopathy	Jaundice, tea-coloured urine, liver metastases.
	Hypoxia, Hypercapnia	Dyspnoea, lung CA/mets, respiratory depressants (e.g. opioids)
Underlying disease	Brain metastases, seizures	Headache, vomiting, known brain cancer/metastases.
	Intracranial haemorrhage	Headache, focal neurological deficits, brain met, coagulopathy, ↓ Plt
Others	Depression	Low mood, loss of interest
	General medical causes of altered mental state remain relevant.	

Closing

Discussion

1. Share 1 take-home lesson about abdominal pain, hyperkalaemia/AKI, or delirium that you learnt today.

2. Imagine that you are on your 1st call. If you find yourself with a sick patient and you don't know what's happening, what will you do?

3. How do you think you can learn from your night calls?

Breakout groups: Discuss & Present

Thank you

nigelfong@gmail.com