

AKI cases for the acute nurse

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Scenario 1

- Mr Smith is a 56-year old gentleman who was referred by his GP with a reduction in conscious level. He had been feeling increasing unwell over the past week and had consulted his GP on two previous occasions during the week. He had complained of feeling feverish and had completely lost his appetite. He has felt a little more breathless than normal.
- He has a past medical history of rheumatoid arthritis and hypertension.
- His current medication is ramipril 10mg once a day, paracetamol 1 g four times a day and diclofenac 50mg three times a day.
- He is currently unemployed, smokes 20 cigarettes a days and drinks 4 pints of beer a day plus additional spirits on occasion.



Results

Observations

- Respiration rate: 23
- Heart rate: 107bpm-bounding
- Blood pressure: 90/50
- O2 sats: 86% on air

Urine dipstick:

Protein: 1+

Bloods

- Na+: 148
- K+: 5.6
- Urea: 34.6
- Creatinine: 760
- Bicarb: 18
- Albumin: 35
- CRP: 136
- Hb: 13.8
- WCC: 18.7



On examination...

- JVP not seen
- Heart sounds normal
- Bilateral crackles on chest with decreased air entry to bases
- Abdomen soft, non tender
- He says he passed a small amount of urine early this morning
- Cool peripheries
- No peripheral oedema





What's wrong?



What's wrong?

- He has AKI 3- why?



What's wrong?

- He has AKI 3- why?
- Has a pneumonia



What's wrong?

- He has AKI 3- why?
- Has a pneumonia
- Septic!



What's wrong?

- He has AKI 3- why?
- Has a pneumonia
- Septic!
- Dehydrated





What's your plan?



What's your plan?

- A- Clear, he is talking to you



What's your plan?

- A- Clear, he is talking to you
- B- Put on high flow O₂, blood gas, CXR



What's your plan?

- A- Clear, he is talking to you
- B- Put on high flow O₂, blood gas, CXR
- C- Needs IV access, fluid challenge (crystalloid), IVABX, catheter insertion, hourly urine output, blood cultures, ECG, CRT



What's your plan?

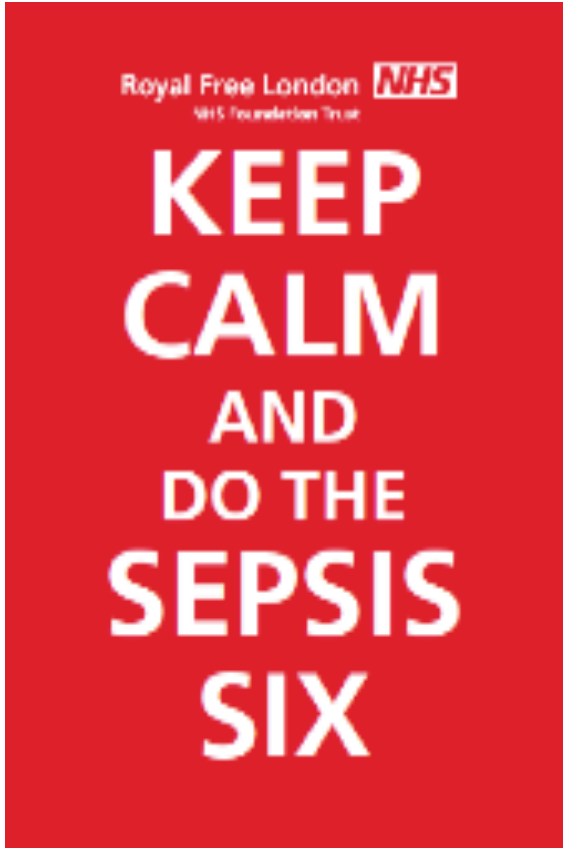
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- D- GCS, blood sugar

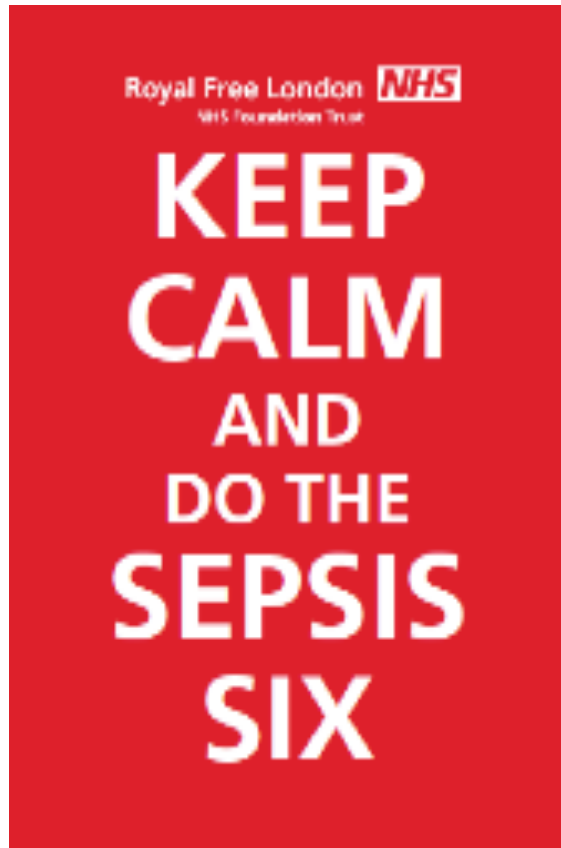


What's your plan?

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- B- Put on high flow O₂, blood gas, CXR
- C- Needs IV access, fluid challenge (crystalloid), IVABX, catheter insertion, hourly urine output, blood cultures, ECG, CRT
- D- GCS, blood sugar
- E- Check skin for rashes, abdomen, look at history, review drugs- stop ramipril, no more NSAID's







1. **Administer high flow oxygen.**
2. Take blood cultures
3. **Give broad spectrum antibiotics**
4. Give intravenous fluid challenges
5. **Measure serum lactate and haemoglobin**
6. Measure accurate hourly urine output





For the rest of the shift...



For the rest of the shift...

- Outreach review, EWS score



For the rest of the shift...

- Outreach review, EWS score
- Hourly observations and urine output



For the rest of the shift...

- Outreach review, EWS score
- Hourly observations and urine output
- After fluid bolus review volume status and give more fluid if needed... aim euvolaemia



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- Hourly observations and urine output
- After fluid bolus review volume status and give more fluid if needed... aim euvolaemia
- Re-check U+E's, creatinine still rising call ITU/ nephrology review, repeat blood gas



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- Re-check U+E's, creatinine still rising call ITU/ nephrology review, repeat blood gas
- Monitor for arrhythmias



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- If unresponsive to fluid will need inotropic support in Level 2 bed



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- Send urine for culture
- Daily weights



For the rest of the shift...

- Outreach review, EWS score
- Hourly observations and urine output
- After fluid bolus review volume status and give more fluid if needed... aim euvolaemia
- Re-check U+E's, creatinine still rising call ITU/ nephrology review, repeat blood gas
- Monitor for arrhythmias
- If unresponsive to fluid will need inotropic support in Level 2 bed
- Send urine for culture
- Daily weights
- Give bicarbonate for acidosis



Scenario 2

- Mr Dinesh Patel is a 72-year old man. He was admitted to the surgical assessment unit 2 days ago with 10 days of abdominal pain and vomiting. BNO for 4 days- before this it was normal.
- He has a past medical history of type 2 diabetes and had sustained a myocardial infarction 16 years previously. He has hypertension and hyperlipidaemia.
- His current medication is aspirin 75 mg od, atenolol 50mg od, metformin 500mg tds, ramipril 5mg od and simvastatin 40 mg od.
- USS was unremarkable and plan is for a CT scan tomorrow.



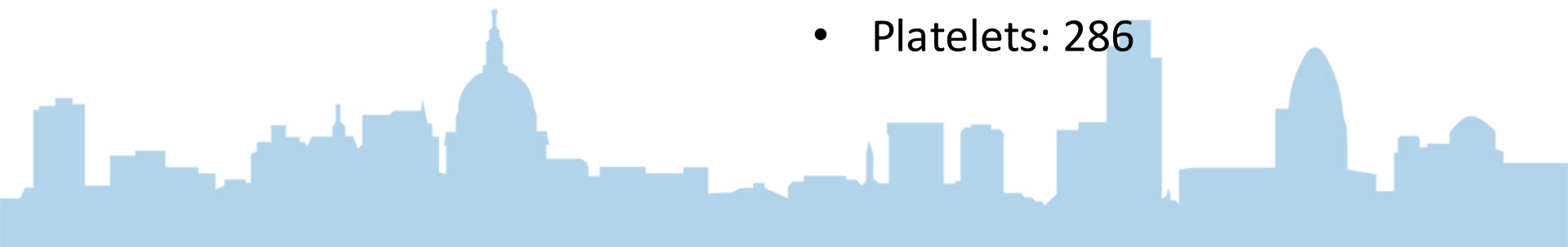
Results

Observations

- Respiration rate: 12
- Heart rate: 66bpm- regular
- Blood pressure: 135/74
- O2 sats: 96% on air

Bloods

- Na+: 140
- K+: 4.2
- Urea: 8.6
- Creatinine: 120, on admission 70
- Bicarb: 19
- Albumin: 38
- CRP: 4
- Hb: 11.5
- WCC: 5
- Platelets: 286





On examination...



On examination...

- JVP not seen



On examination...

- JVP not seen
- Heart sounds normal



On examination...

- JVP not seen
- Heart sounds normal
- Chest clear



On examination...

- JVP not seen
- Heart sounds normal
- Chest clear
- Distended abdomen



On examination...

- JVP not seen
- Heart sounds normal
- Chest clear
- Distended abdomen
- He passed 80mls at 08:00 this morning and 120mls at 13:00



On examination...

- JVP not seen
- Heart sounds normal
- Chest clear
- Distended abdomen
- He passed 80mls at 08:00 this morning and 120mls at 13:00
- Cool peripheries



On examination...

- JVP not seen
- Heart sounds normal
- Chest clear
- Distended abdomen
- He passed 80mls at 08:00 this morning and 120mls at 13:00
- Cool peripheries
- No peripheral oedema



On examination...

- JVP not seen
- Heart sounds normal
- Chest clear
- Distended abdomen
- He passed 80mls at 08:00 this morning and 120mls at 13:00
- Cool peripheries
- No peripheral oedema
- NGT on free drainage, spiggoted for meds, IV fluids running 83mls/hr

What are you concerned about?

- He has AKI stage 1
- Urine output borderline- ?weight
- Could be dehydrated- vomiting, cool peripherally
- Bicarb low- could be acidotic
- Going for CT scan with contrast





What's your plan?



What's your plan?

- Use the smallest dose of contrast possible to answer the clinical



What's your plan?

- Use the smallest dose of contrast possible to answer the clinical question
- Stop ramipril and metformin



What's your plan?

- Use the smallest dose of contrast possible to answer the clinical question
- Stop ramipril and metformin
- IV volume expansion before and after scan- NaCl 0.9% or sodium bicarbonate



What's your plan?

- Use the smallest dose of contrast possible to answer the clinical question
- Stop ramipril and metformin
- IV volume expansion before and after scan- NaCl 0.9% or sodium bicarbonate
- No evidence for N- acetylcysteine!



What's your plan?

- Use the smallest dose of contrast possible to answer the clinical question
- Stop ramipril and metformin
- IV volume expansion before and after scan- NaCl 0.9% or sodium bicarbonate
- No evidence for N- acetylcysteine!
- Strict input/output- give faster fluids and review for response



What's your plan?

- Use the smallest dose of contrast possible to answer the clinical question
- Stop ramipril and metformin
- IV volume expansion before and after scan- NaCl 0.9% or sodium bicarbonate
- No evidence for N- acetylcysteine!
- Strict input/output- give faster fluids and review for response
- Daily weights



What's your plan?

- Use the smallest dose of contrast possible to answer the clinical question
- Stop ramipril and metformin
- IV volume expansion before and after scan- NaCl 0.9% or sodium bicarbonate
- No evidence for N- acetylcysteine!
- Strict input/output- give faster fluids and review for response
- Daily weights
- Urine dip, USS



Scenario 3

- You are looking after Polly, 37 years old who was admitted two days ago following an RTA where she suffered considerable bruising to her abdomen and a # femur
- She has no PMH
- No regular medications



Results

Observations

- Respiration rate: 26
- Heart rate: 110bpm-bounding
- Blood pressure: 145/91
- O2 sats: 92-93% on air

Urine:

Reddish/brown in colour

Bloods

- Na+: 133
- K+: 6.5
- Urea: 21
- Creatinine: 250, baseline 54
- Bicarb: 15
- Hb: 11.0
- WCC: 18.7
- Ca+: 1.8
- Phosphate: 1.7
- CK: 1200





On examination...



On examination...

- JVP raised



On examination...

- JVP raised
- Slight heart murmur



On examination...

- JVP raised
- Slight heart murmur
- Chest quiet to bases



On examination...

- JVP raised
- Slight heart murmur
- Chest quiet to bases
- Abdomen soft, tender



On examination...

- JVP raised
- Slight heart murmur
- Chest quiet to bases
- Abdomen soft, tender
- Urine output 5, 20, 10mls last few hours.



On examination...

- JVP raised
- Slight heart murmur
- Chest quiet to bases
- Abdomen soft, tender
- Urine output 5, 20, 10mls last few hours.
- +ve 1.5litres yesterday



On examination...

- JVP raised
- Slight heart murmur
- Chest quiet to bases
- Abdomen soft, tender
- Urine output 5, 20, 10mls last few hours.
- +ve 1.5litres yesterday
- Warm peripherally



On examination...

- JVP raised
- Slight heart murmur
- Chest quiet to bases
- Abdomen soft, tender
- Urine output 5, 20, 10mls last few hours.
- +ve 1.5litres yesterday
- Warm peripherally
- Ankles are swollen



On examination...

- JVP raised
- Slight heart murmur
- Chest quiet to bases
- Abdomen soft, tender
- Urine output 5, 20, 10mls last few hours.
- +ve 1.5litres yesterday
- Warm peripherally
- Ankles are swollen
- Maintenance fluids running



What are you concerned about?

- She has AKI stage 3
- Urine output low, positive balance yesterday, swollen ankles ?weight- overloaded
- Bicarb low- could be acidotic
- ATN secondary to rhabdomyolysis





What's your plan?



What's your plan?

- A- Keep airway clear, sit up



What's your plan?

- A- Keep airway clear, sit up
- B- Put on oxygen, blood gas, check pO₂, CO₂



What's your plan?

- A- Keep airway clear, sit up
- B- Put on oxygen, blood gas, check pO₂, CO₂
- C- Stop fluids, ECG (elevated K⁺), re-check bloods, blood gas, strict input/output



What's your plan?

- A- Keep airway clear, sit up
- B- Put on oxygen, blood gas, check pO₂, CO₂
- C- Stop fluids, ECG (elevated K⁺), re-check bloods, blood gas, strict input/output
- D- Check blood sugar, GCS



What's your plan?

- A- Keep airway clear, sit up
- B- Put on oxygen, blood gas, check pO₂, CO₂
- C- Stop fluids, ECG (elevated K⁺), re-check bloods, blood gas, strict input/output
- D- Check blood sugar, GCS
- E- check for rashes, observe colour of urine





What next...



What next...

- Daily weights



What next...

- Daily weights
- Fluid restriction



What next...

- Daily weights
- Fluid restriction
- Urine dip



What next...

- Daily weights
- Fluid restriction
- Urine dip
- USS



What next...

- Daily weights
- Fluid restriction
- Urine dip
- USS
- Needs RRT



What next...

- Daily weights
- Fluid restriction
- Urine dip
- USS
- Needs RRT
- May need to treat K+ while await RRT



