00:00:05 Faculty

So this is Winston Moore. He's a 75 year old gentleman. So about four days ago he went to see his GP and basically had a UTI and he started on antibiotics.

00:00:19 Faculty

He just began to feel really shooked up.

00:00:21 Faculty

So he came into ED.

00:00:24 Faculty

And he has a 2 day history of being at home, just being really lethargic and just not great.

00:00:29 Faculty

So came into ED.

00:00:34 Faculty

And he was getting really quite septic. So gave him loads of fluid resuscitation. And changed IV antibiotics.

00:00:39 Faculty

He was having a low GCS at that time.

00:00:41 Faculty

We're just a wee bit worried about what was going on, so they did this CT scan at that time and the CT scan was found to be normal. CT head.

00:00:51 Faculty

And started him on IV antibiotics and did all those good things for a sepsis.

00:00:55 Faculty

He's been in ICU now for about two days. He is tubed, he's got a size 8 ET tube in.

00:01:05 Faculty

Did you say GCS?

00:01:07 Faculty

Just GCS, and also quite septic looking as well.

00:01:13 Faculty

So, GCS as I say. He is on by level.

00:01:20 Faculty

Was doing quite well, actually, so he's only on 60/5, he's only on 30%.

00:01:24 Faculty

Yeah. And we're thinking that we should be about ready to extubate him.

00:01:28 Faculty

The sedation has been off and it's been off for probably about 14 hours now.

00:01:33 Faculty

And he's not really showing any signs to wake, so wee bit worried about his head.

00:01:37 Nurse 1

How long has he been out, sorry?

00:01:37 Faculty

14 hours.

00:01:39 Faculty

Because he's on minimal settings here, we thought we could extubate but he's not waking up.

00:01:45 Faculty

We have turned the station off. I have still the fentanyl and propofol attached should you need it should he wake up.

00:01:53 Faculty

We have booked CT head and that's going to be in 2 hours.

00:01:58 Faculty

But he's been perfectly fine.

00:02:01 Faculty

Apart from that, the only thing he has, he's got noradrenalin going. But that's only now at 4 mills per hour.

00:02:07 Faculty

And that's single strength and he's got, I mean IV fluids going and that's just 100 mills an hour. And that’s been fine.

00:02:14 Nurse 1

Anything in his medical history?

00:02:16 Faculty

None. None really that we need to be aware of.

00:02:40 Faculty

Just imagine there's been lots of obs that have been done that they before. But these are the obs that we have.

00:02:45 Nurse 1

Can I record actually?

00:03:22 Nurse 1

Do you have labs for him?

00:03:25 Faculty

I don't have any labs, just the blood gas. That was about 3 hours ago.

00:03:32 Nurse 1

I’d like to do an ECG on him.

00:03:37 Faculty

I'll see if I can get the ECG machine.

00:03:47 Faculty

It's just being used in section C, but when it's free, I'll get it for you.

00:03:55 Nurse 1

Electrolytes might be different.

00:04:00 Faculty

I can put that through for you.

00:04:13 Faculty

Do you want me to call anybody or are you happy?

00:04:16 Nurse 1

I want help now. Yes please.

00:04:19 Faculty

Can you get the doctor and the coordinator please.

00:04:29 Nurse 1

Blood pressure is holding.

00:04:37 Faculty

Did you want the blood gas?

00:04:39 Nurse 1

Yes please.

00:04:42 Faculty

Did you want me to do that for you?

00:04:44 Nurse 1

Yes please.

00:04:47 Doctor

Hi there. What's happening?

00:04:55 Nurse 1

Hi, patient came with UTI to hospital, he's been treated with antibiotics.

00:05:02 Nurse 1

Initially on admission has been normal for another couple of days.

00:05:04 Nurse 1

He's been turned off sedation for a couple of days and he’s not waking up.

00:05:10 Nurse 1

And he's been on sinus rhythm 90 beats per minute, and he's been tachycardic now. Now on 169.

00:05:20 Nurse 1

Don't have labs only blood gas.

00:05:26 Nurse 1

Potassium is 3.2...

00:05:27 Doctor

Sorry, when did he deteriorate into this rhythm? And with this blood pressure just now, OK. And and throughout the rest of the day has been fairly stable?

00:05:36 Nurse 1

Just now (he deteriorated), he's been quite stable actually

00:05:39 Doctor

Alright, we'll have a look at those in a minute, I'll just have a quick look at him and grab a stethoscope.

00:05:46 Doctor

And this gentleman's name is?

00:05:49 Faculty

Winston Moore.

00:05:51 Doctor

Hello, Winston just come to have a look at you.

00:05:55 Nurse 2

Should I get someone to check some potassium out for me?

00:05:58 Nurse 1

Yes, please.

00:06:03 Doctor

Sats are 98% on 30% oxygen.

00:06:07 Doctor

He's not on a huge amount of respiratory support, I'll just listen to his chest. Has he been stable from my respiratory perspective?

00:06:12 Nurse 1

Yes.

00:06:31 Doctor

OK, so his chest sounds nice and clear.

00:06:36 Doctor

So got a map of 69.

00:06:38 Nurse 1

Going to need some more adrenaline.

00:06:41 Doctor

How warm does he feel peripherally?

00:06:46 Faculty

He's a bit cool peripherally.

00:06:46 Doctor

OK, just checking cap refill time.

00:06:52 Faculty

Cap refill is 3 seconds.

00:07:03 Doctor

OK guys, I was just running through an ABC assessment and we've identified the main problem of circulation.

00:07:10 Doctor

It looks like he's in AF with ventricular response. His blood pressure is OK, but that's on the adrenaline. He's on 4 mills an hour and that is single strength.

00:07:20 Nurse 1

Single strength. Yeah. You see on the background of fluids.

00:07:27 Nurse 1

Just potassium, send another labs now.

00:07:31 Doctor

The potassium is 3.2.

00:07:34 Nurse 1

We are replacing it.

00:07:37 Nurse 2

We've just started replacing it now.

00:07:38 Nurse 1

Do we need to get some magnesium?

00:07:41 Doctor

So can we have a look at magnesium from yesterday?

00:07:45 Doctor

I'd been very surprised if he went three days in ICU without a magnesium check.

00:07:49 Nurse 2

That would be weird.

00:07:55 Faculty

Magnesium, I think it was the low side of normal last time.

00:07:59 Doctor

I think it would be appropriate to give some magnesium as well.

00:08:05 Doctor

So are you happy to get those?

00:08:16 Doctor

So our options are...so probably the cause is a combination of sepsis and low end normal electrolytes.

00:08:24 Doctor

So the question is whether or not we should load him with amiodarone now given he's relatively stable.

00:08:30 Doctor

Or whether we should replace electrolytes in the first instance.

00:08:34 Nurse 2

Would you consider some fluids?

00:08:36 Doctor

And that's the other point. So just from a fluid perspective, I'm just looking for proof. And do we have a fluid balance chart for this gentleman?

00:08:53 Faculty

It's not positive when you look at his fluid balance.

00:08:55 Faculty

He's not had loads of fluids before coming to us, but the antibiotics...

00:09:02 Faculty

He's a litre positive.

00:09:04 Doctor

He's a little positive over the 24 hours.

00:09:08 Doctor

And in terms of urine output, I'm just looking for catheter.

00:09:10 Faculty

50 mills an hour.

00:09:10 Doctor

OK. His urine output is reasonable but not amazing. I think we could try a small bolus of fluid.

00:09:22 Doctor

And are there any other measures of fluid responsiveness available to us?

00:09:28 Doctor

Does this gentleman have any reasons why we can't do a straight...

00:09:34 Nurse 2

This is the magnesium drawn up.

00:09:37 Doctor

So we're just gonna do a straight leg raise. Just lift up your legs, sir.

00:09:54 Doctor

Give that another 20 seconds or so.

00:09:57 Nurse 1

I just started another fluid.

00:10:03 Doctor

So actually he's responding quite well to that. So that suggests that he probably is fluid responsive.

00:10:09 Doctor

He's not grossly positive, particularly for his clinical course.

00:10:18 Doctor

If we can give half given he's already hypokalemic?

00:10:27 Doctor

And that blood pressure is just dropping off there now.

00:10:31 Doctor

So heart rate is still the same.

00:10:32 Doctor

We've got a good arterial line trace. Can we just put the noradrenaline up?

00:10:46 Doctor

And if we can get that bolus of fluid in. Central...

00:10:48 Nurse 1

Yeah, we’ve got a central line

00:10:50 Doctor

If it's quicker, we could just run it openly.

00:11:01 Faculty

Yeah, that's fine. So (unintelligible) is now up.

00:11:05 Nurse 2

Bit more on your norad. Going up to five mills, go up to six and see.

00:11:16 Doctor

Ok, so blood pressure is a little saggy. He remains in AF.

00:11:21 Nurse 2

Going to check the lines, just to make sure.

00:11:24 Nurse 2

He's not responding to the increase in the norad.

00:11:26 Doctor

OK. We think he probably is fluid responsive, we’re giving him some fluid.

00:11:32 Doctor

It's going to take a while to correct his electrolyte, so given he is now hypotensive, have to go up on the norad, think we probably ought to, he's tachycardic.

00:11:50 Doctor

OK guys, just to recap where we are. This gentleman with urosepsis is in AF with ventricular response. Got a saggy blood pressure. We think the cause is a combination of sepsis and low magnesium or potassium plus magnesium.

00:12:06 Doctor

We're replacing potassium. Magnesium. We are giving a bit of fluid because we think he's fluid responsive.

00:12:16 Doctor

But given that we're now going up on the noradrenaline, we said we were going to think about attempted chemical cardioversion or rate control.

00:12:22 Doctor

So we're going on amiodarone.

00:12:24 Nurse 2

We'll go amiodarone because I'm concerned he's not responding fast enough. And could deteriorate.

00:12:27 Doctor

Yeah, absolutely. You're quite right. So it's gonna take hours to load with that and we've got other priorities we need to bear in mind that we are aiming to get a CT head on this gentleman tonight. So it must be relatively urgent to do it tonight rather than wait until tomorrow. So we need to bear that in mind as well.

00:12:41 Nurse 2

Have you had a chance to check his pupils?

00:12:45 Nurse 1

No haven’t a chance to do that.

00:12:49 Doctor

I can do that.

00:12:53 Nurse 2

Amiodarone, do we want 300 milligrams?

00:12:57 Doctor

Yeah, 300 milligrams over 45 minutes or over an hour, whichever is achievable.

00:13:02 Nurse 2

Do the extra loading?

00:13:06 Doctor

Actually, his sats...I don't know what his sats were.

00:13:09 Nurse 1

I don’t know, but they’re 93 now.

00:13:14 Doctor

So 30% oxygen his pO2 was 13.5. So that's actually dropped off.

00:13:25 Doctor

Just have another quick listen to his chest.

00:13:41 Nurse 2

I'm doing 300 to start with and then I'll do the next 450 after that.

00:13:48 Doctor

OOG still good. I don't know if you want to try some of those maybe?

00:13:51 Doctor

Yeah, can do.

00:13:55 Nurse 1

Came up to 100 now on 50%.

00:14:06 Doctor

And then the other thought I had was, is there any way you can do (FISE?). I have not been signed off yet, so is there anyway you can do a quick ECHO?

00:14:17 Faculty

I will see if I can find anybody I don't think so at the moment.

00:14:29 Doctor

Do you think it's working on the adrenaline?

00:14:31 Doctor

Just raise to a map of 65.

00:14:50 Doctor

We've gone up a little bit more on the norad.

00:14:54 Nurse 2

Yes, I've gone up 6 mills.

00:14:55 Doctor

And his sats are still not...

00:14:59 Nurse 1

Sats are 94, 95 now.

00:15:04 Nurse 1

Can we take a chest X-ray guys?

00:15:05 Doctor

I don't. Do you know when he last had a chest x-ray?

00:15:10 Faculty

I can see if I can find out.

00:15:11 Doctor

So he's been in for three days, so I'm sure he's had one.

00:15:19 Doctor

We don't really know what's going on. It's possible he's developed ventilation associated pneumonia or something.

00:15:25 Faculty

I do think he had one this morning I will just check.

00:15:32 Nurse 2

Do we have somewhere I can administer this amiodarone?

00:15:35 Faculty

We had sedation going, but as the sedation is turned off, you might want to that line.

00:15:40 Faculty

Yes, this is his x-ray from this morning.

00:15:43 Doctor

OK.

00:15:47 Nurse 2

So your fentanyl is off at the moment.

00:15:54 Doctor

I would like to know if this patchy contamination was there compared to when he first came in.

00:16:03 Faculty

That is sort of what it was like.

00:16:07 Faculty

They weren't concerned about it this morning. It was sort of expected.

00:16:15 Nurse 2

I'm putting up 300 milligrams can you make sure you prescribe that for me?

00:16:19 Doctor

Yeah, I'll do that on the system, do I need to prescribe?

00:16:26 Faculty

If you can.

00:16:27 Nurse 2

Yeah, that'd be great. And then should I make sure we have the 450 ready to go after that?

00:16:34 Doctor

Yes. OK. So this book pressure is not good enough.

00:16:40 Doctor

So we're going up on norad, do we need to a bit more quickly?

00:16:52 Nurse 2

Might be a point where we need to consider setting up for cardioversion because it's not enough.

00:16:56 Doctor

Yeah. My my concern with cardioverting him is that I think this has all been driven by sepsis.

00:17:02 Doctor

And electrolytes driven by problems that aren't going to be fixed by electricity. So whilst you might temporarily kindly cardiovert I I think it's likely that he will go back into rapid AF.

00:17:16 Nurse 1

It's becoming more tachy, now.

00:17:23 Nurse 2

Fluid bolus is halfway through. So that’s not really working. Fast AF.

00:17:27 Nurse 1

Any other (unintelligible) would help, like vitamin?

00:17:27 Nurse 2

Would you consider a second one?

00:17:34 Doctor

So yeah...um...the noradrenaline might be driving the AF a little bit. What second were you thinking?

00:17:51 Doctor

We're still only on a single strength.

00:17:55 Doctor

So we're not at a point where we would add it by default. It’s better from a rate perspective.

00:18:06 Doctor

I think we might just need to increase the noradrenaline a bit more.

00:18:08 Nurse 1

Increase our rate to 10, and then see what happens.

00:18:15 Doctor

And I haven't had a look at the rest of this gentleman. So just having a look at his abdomen.

00:18:19 Doctor

Sorry, Sir, just looking at your tummy.

00:18:35 Doctor

There's no blood loss on the bed or anything like that?

00:18:38 Nurse 1

More tachy, 180.

00:18:41 Doctor

Could you run another gas for me?

00:18:45 Nurse 2 (on phone)

Well, that's alright. It's not too bad, although we are in the middle of one of our patients is deteriorating it a bit and I'm just we're just going through a few issues. Urosepsis from a few days ago...not really fit for a scan at the moment. He’s in fast AF. We’re thinking his electrolytes are off but we’re just not sure. We’re just going through some things. He’s hypotensive and his blood pressure is between 69 and 75.

00:18:56 Doctor

So we've run a gas, will read the electrodes and in particular check the haemoglobin on there. We’ll get that gas running and then I think we will have to attempt cardioversion even though I think it’s...

00:19:29 Nurse 2

This is the consultant on call, I'll just carry on telling you the story and then I can speak to you.

00:19:38 Nurse 2 (on phone)

So we're giving some magnesium, the potassium is being supplemented. Now, that was 3.2. Norad has gone up significantly, it's doubled in the 15 minutes we've been with him.

00:19:52 Nurse 1

He doesn't have any allergies?

00:19:58 Nurse 2 (on phone)

At the moment we are loading the amiodorane, 300 milligrammes with the plan to go onto 450.

00:20:05 Nurse 2 (on phone)

Just talking with DOCTOR at the moment and trying to decide whether or not to consider adding another phase. But we're only on 10 mills an hour single strength norad so we have a little room to move but we're just deliberating at the moment. I’ll just see if DOCTOR has a moment to speak you. Otherwise, I’ll keep passing things on to you.

00:20:10 Doctor

The basics are reasonable considering the haemodynamic picture.

00:20:23 Nurse 1

Before the sats.

00:20:44 Doctor (on phone)

Yeah. Harry, the gentleman has been in for three days with urosepsis.

00:20:53 Nurse 2

Can we get another pressure bag?

00:21:03 Doctor

Is this gentleman's temperatures hot?

00:21:14 Doctor

Could we get another ECG please?

00:21:21 Doctor (on phone)

Yeah, I guess the other possibility is whether or not he had NI. I couldn't see anything obvious.

00:21:30 Doctor

Blood pressure now is 67/36.

00:21:35 Doctor

So he's on much more noradrenaline.

00:21:38 Nurse 2

Temperature is 37.

00:21:42 Doctor

We're gonna have to cardiovert him.

00:21:53 Doctor (on phone)

Yeah. OK. So we'll do that. And do you want me to give you a ring back and let you know?

00:22:08 Nurse 2

Yeah, we're just getting ready for you (to cardiovert).

00:22:11 Faculty

Machines being used in section C for ECG.

00:22:15 Doctor

So we'll get the pads on.

00:22:20 Nurse 2

We just decided to give the fluid a little bit faster. So I’ve just changed it.

00:22:23 Doctor

Yeah. How much fluid has he had?

00:22:26 Nurse 2

He's had, there was 150 of this one and I'm just gonna stop that.

00:22:37 Doctor

I think we're set up to cardiovert him, we'll just focus on that cause I think that's the next most important step.

00:22:40 Doctor

So we've got pads on, we've got good contact, options in a sealed system.

00:22:52 Nurse 2

He's going to need a bolus.

00:22:54 Doctor

I just need to get the sync on.

00:23:02 Doctor

OK guys, so we're gonna cardiovert him.

00:23:03 Doctor

Is there anything else that we need to do urgently?

00:23:04 Nurse 2

He hasn't had a dose of pain relief recently, so we should probably see if we've got somewhere where we could reattach a bolus of fentanyl.

00:23:14 Doctor

Yeah, is he on propofol at the moment?

00:23:18 Faculty

Sedation has been off for 14 hours.

00:23:19 Doctor

OK, he's not waking up.

00:23:23 Nurse 1

Are you happy to do without?

00:23:25 Doctor

I think we should just cardiovert.

00:23:27 Doctor

OK, so everyone's clear the bed, the options part of the seal circuit. I'm going to charge and sync is on.

00:23:35 Doctor

And charging.

00:23:38 Doctor

Everyone, stand clear. I'm shocking.

00:23:43 Doctor

OK, so we've got sinus rhythm on the monitor.

00:23:46 Doctor

Just feeling for a pulse. Really carotid pulse. And he's in sinus rhythm.

00:23:59 Doctor

So let's just reevaluate. So we're still happy with our airway, position of the tube is good. Respiratory perspective...

00:24:07 Nurse 1

Become tachy again.

00:24:15 Nurse 1

Losing output.

00:24:16 Doctor

OK. And the amiodarone is still infusing?

00:24:18 Nurse 1

It's running, yeah.

00:24:20 Doctor

Electrolytes are still going?

00:24:21Nurse 1

Yeah.

00:24:22 Doctor

We'll just try cardioverting him again.

00:24:30 Doctor

Everyone else stand clear of the bed, please.

00:24:35 Nurse 2

Is it 150?

00:24:37 Doctor

We could increase the dose, but he did cardio with that so...

00:24:41 Nurse 2

You know, normally it would be 150, 200.

00:24:56 Doctor

Sync is on, charging, shocking, stand clear.

00:25:21 Doctor

So he remains in AF with RVR and he remains hypotensive.

00:25:30 Doctor

I'm not sure that increasing the energy or further attempts are gonna be successful. I think I need to speak to the consultant. Any other points that anyone else can think before I speak to her?

00:26:00 Nurse 2

OK, let's increase norad a little bit further.

00:26:07 Nurse 2

Get a gas and just see what the potassium is doing?

00:26:09 Doctor (on phone)

Hi. So we've been unable to cardiovert this gentleman. He's had two shocks, one at 150 joules and one at 200 joules.

00:26:19 Doctor (on phone)

And the first time he went back into sinus rhythm, the second time back to AF. He remains hypotensive, we haven't tried a third attempt.

00:26:41 Doctor (on phone)

He did the first time briefly, but I just am not sure what's driving this.

00:26:53 Nurse 2

We definitely need to get him back into a better rhythm than what he is now.

00:27:00 Doctor (on phone)

Yeah, the only other thought was whether or not it was worth getting someone to do an ECHO, but going to be tricky with a rate this fast.

00:27:07 Faculty

The gas machine is calibrated so I will come back and do that gas.

00:27:13 Nurse 2

And need to know what the potassium is, that would be great.

00:27:19 Doctor (on phone)

OK, we'll do that. I'll call you back. Thanks

00:27:22 Doctor

OK, so we're gonna try our third shock.

00:27:27 Doctor

Same as before, sealed system, we're up to 200 joules.

00:27:31 Doctor

Everyone stand clear the bed and charging.

00:27:37 Doctor

Sync is on. I'm shocking. Stand clear.

00:27:42 Doctor

Shock delivered.

00:27:46 Doctor

Can we just check for the pulse?

00:27:53 Doctor

Ok this is asystole, start chest compressions.

00:28:19 Doctor

So this is continuing chest compressions. We're in a non shockable rhythm here, putting out 2222, administer some adrenaline.

00:28:29 Doctor

So, adrenaline, this is one in 10000.

00:28:42 Doctor

So the defib was on so we'll get that back on.

00:28:52 Doctor

Flush would be...

00:29:01 Nurse 1

One milligram of adrenaline given.

00:29:06 Doctor

20 mil flush please and lift up the arm.

00:29:08 Doctor

You OK with chest compressions for now?

00:29:13 Doctor

27 seconds on the monitor.

00:29:20 Doctor

OK guys. So we're in unshockable rhythm, we've given some adrenaline, we need to think about the vertical causes.

00:29:26 Doctor

Can you turn the option up to 100% on the ventilator?

00:29:28 Doctor

Yeah, and if someone is free, can they come here and get a background match of 15 litres?

00:29:34 Doctor

So C circuit with 50 of oxygen and and if you could ventilate manually at 10 to 12 breaths per minute.

00:29:49 Doctor

We've got fluids going in for potential (unintelligible). We have addressed this hypokalemia and this gentleman hasn't been hypothermic.

00:30:03 Faculty

Just disconnecting ventilator.

00:30:07 Doctor

So just continuous chest compressions, we'll reassess the rhythm at the end of two minutes.

00:30:27 Doctor

So if you just pause chest compressions?

00:30:50 Doctor

So we've got a blood pressure and we've got a sinus tachycardia. So we've got an output.

00:30:59 Doctor

Pause and reassess.

00:31:03 Doctor

Getting back on the ventilator.

00:31:05 Doctor

And we're still tidal CO2.

00:31:09 Doctor

Just keep the option at 100% for now, but we can think about reducing it shortly.

00:31:15 Doctor

Are we achieving tidal volumes?

00:31:18 Nurse 2

Not quite.

00:31:27 Doctor

We've got good tidal volumes on the pressures that we had before.

00:31:30 Doctor

We're going to chip away the option.