An Introduction to Anaesthesia

Perioperative
MEDICINE PROGRAMME

KEY ISSUES:
PUTTING IT ALL TOGETHER

the centre for Anaesthesia UCL

Dr Robert Stephens

Consultant in Anaesthesia

UCL Hospitals

WHAT WE'LL CHAT ABOUT: SOME KEY THINGS

- Do ask questions at any stage

- Classic Run through of a case
- Assessing the patient: what worries me and should worry you!
- Monitor walk through
- Airway monitoring
- Breathing – how to set the ventilator
- Circulation issues and solutions
- Wrap up

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CLASSIC RUN THROUGH LAPAROTOMY

- Patient preassessment- weeks before
- Meet on day, chat, Ix, Discuss
- Team brief
- Anaesthesia Room, WHO, Monitoring, small IVI, ABx
- Spinal?
- Fentanyl…. wait, Propofol… asleep ? Paralyse = triad

CLASSIC RUN THROUGH

CLASSIC RUN THROUGH

- IPPV 0_2 / air/ volatile @ 1.1 MAC, intubate
- big ivi,
  - 'definitive' analgesia (paractamol, ibuprofen, morphine 2-4 mg repeated)
  - Blocks ? Surgeons local ? etc
- Surgery
  - Fluid bolus's (how much?), CO monitors? Bleeding?
- Reversal
  - spontaneous breathing, turn up 0_2, off volatile, extubate to 0_2 mask
- Recovery or ICU
- Other drugs /issues

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ASSESSING THE PATIENT:
WHAT WORRIES ME AND SHOULD WORRY YOU

- Go talk before anaesthesia
- Lots of issues
- Hx, Ex, look at Ix – Hb, eGFR, ECG
- Discussion – what's going to happen, what options
- Think and Plan: A B C D (allergies) Pain relief, ICU?

ASSESSING THE PATIENT:
WHAT WORRIES ME AND SHOULD WORRY YOU

- Worries
  - Airway – difficult – ventilation/Oxygenate or intubation
  - BC: exercise tolerance < 2 flights
  - D allergies, drugs to stop/carry on
  - Calculate Risk score SORT (next slide)
  - …Discussion – unrealistic, don't understand risks
  - Not been to preassessment (7X death)

ASSESSING THE PATIENT:
WHAT WORRIES ME AND SHOULD WORRY YOU

SORT

- Surgical Outcome Risk Tool
- Started after 2011 NCEPOD study "Knowing the Risk"
- A way of risk assessing procedures
- 1 month mortality
- Useful in considering 'Procedure vs nothing vs alternative'
- App and website

Google

Sort score

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www.sortsurgery.com

Surgical Outcome Risk Tool (SORT) - SOuRCe / NCEPOD

Surgical Outcomes Research Centre : A source of expert advice within and outside UCLH on risk adjustment and outcomes analysis for the surgical specialities.

Background · Resources · High Risk

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www.sortsurgery.com › SORT_background

Background - Surgical Outcome Risk Tool (SORT)

Background. The 2011 NCEPOD study on perioperative care ("Knowing the Risk")[1] looked at risk and outcome in patients undergoing inpatient surgery. 19,007

www.ncepod.org.uk › sort

Surgical Outcome Risk Tool (SORT) - NCEPOD

The **SORT** is a surgical preoperative risk prediction tool. It provides a percentage estimate of death within 30 days of inpatient surgery for adults (exclusions ...

You've visited this page 2 times. Last visit: 19/07/19

Surgical Outcome Risk Tool (SORT)

Main Group

Select procedure group....

Sub Group

Select procedure sub-group....

Procedure Description

Select procedure....

Severity ?

Minor ○ Intermediate ○ Major ○ Xmajor/complex ○

ASA-PS ?

1 ○ 2 ○ 3 ○ 4 ○ 5 ○

Urgency

Elective ○ Expedited ○ Urgent ○ Immediate ○

Thoracics, gastrointestinal or vascular surgery

Yes ○ No ○

Cancer ?

Yes ○ No ○

Age

<65 ○ 65-79 ○ >80 ○

Disclaimer:

The SORT uses some information about patient health and the planned surgical procedure to provide an estimate of the risk of death within 30 days of an operation. The percentages provided by the SORT are only estimates taking into account the general risks of the procedure and some information about the patient, but should not be confused with a patient-specific estimate in an individual case. As with all risk prediction tools, not every factor which may affect outcome can be included, and there may well be other patient-specific and surgical factors which may influence the risk of death significantly.

User notes

All values must be present before the calculation can take place.
Surgical severity will be calculated automatically on entry of procedure details.
If the procedure you are searching for is not listed, please use the nearest available procedure for calculation.

About SORT

The SORT is a pre-operative risk prediction tool for death within 30 days of surgery. It has been developed and validated for use in inpatient non-neurological, non-cardiac surgery in adults (aged 16 or over).

This web resource is the result of a collaborative effort between NCEPOD researchers (Karen Protopapa and Neil Smith) and doctors in anaesthesia and intensive care medicine who are part of the SOuRCe team (Ramani Moonesinghe and Jo Simpson).

The UCL/UCLH Surgical Outcomes Research Centre (SOuRCe)
www.uclsource.com

The National Confidential Enquiry into Patient Outcome and Death (NCEPOD)
www.ncepod.org.uk

Further Information

Surgical Outcome Risk Tool (SORT)

Main Group

Abdomen (excluding urinary and reproductive organs)

Sub Group

Large intestine

Procedure Description

Right hemicolectomy

Severity ?

Minor ○ Intermediate ○ Major ○ Xmajor/complex ●

ASA-PS ?

1 ○ 2 ○ 3 ● 4 ○ 5 ○

Urgency

Elective ○ Expedited ● Urgent ○ Immediate ○

Thoracics, gastrointestinal or vascular surgery

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Age

<65 ○ 65-79 ● >80 ○

Reset Form Calculate Risk

Risk : 10.14%

User notes

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<65 ○ 65-79 ○ >80 ●

Reset Form | Calculate Risk

Risk : 20.29%

User notes

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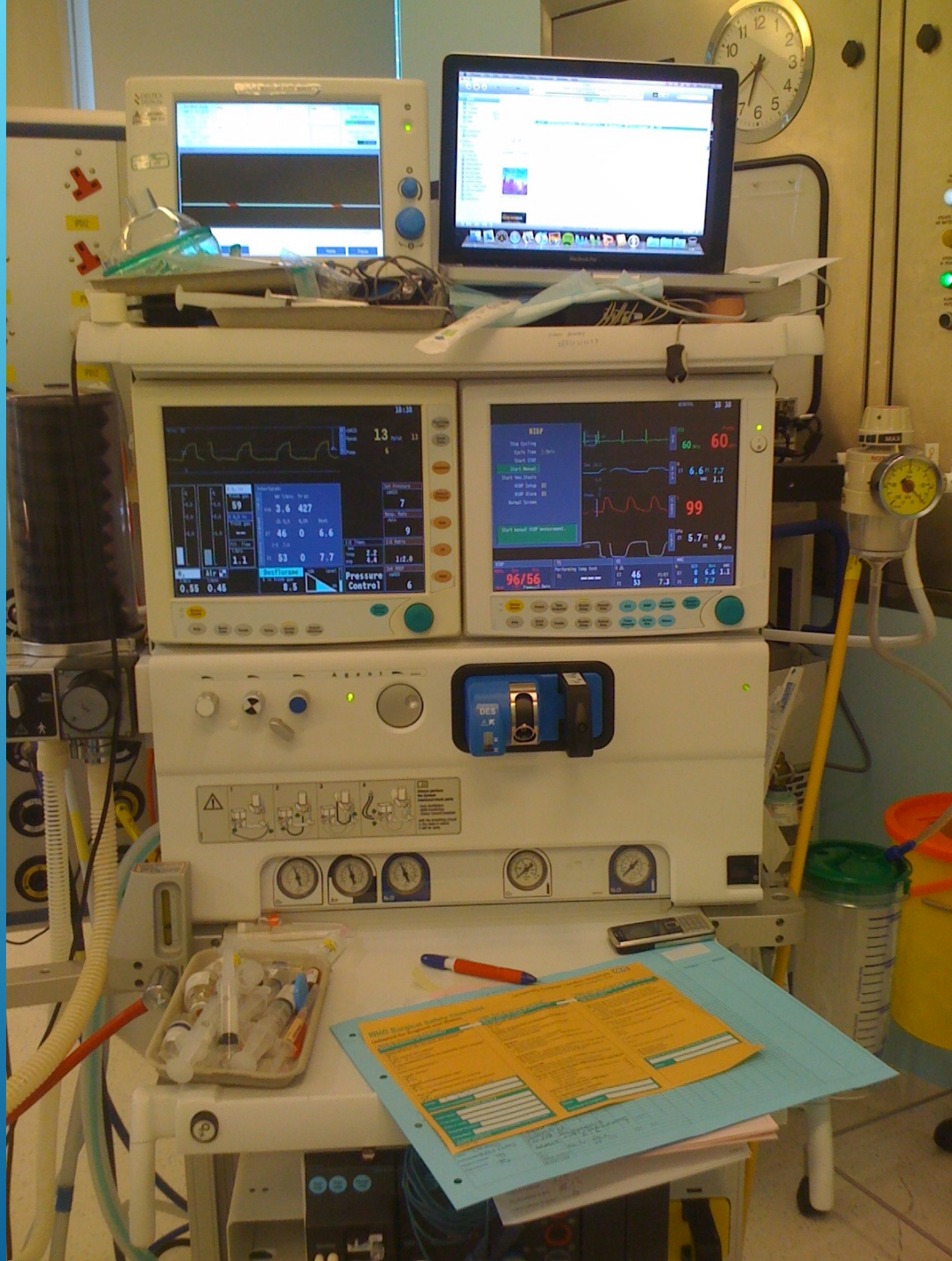
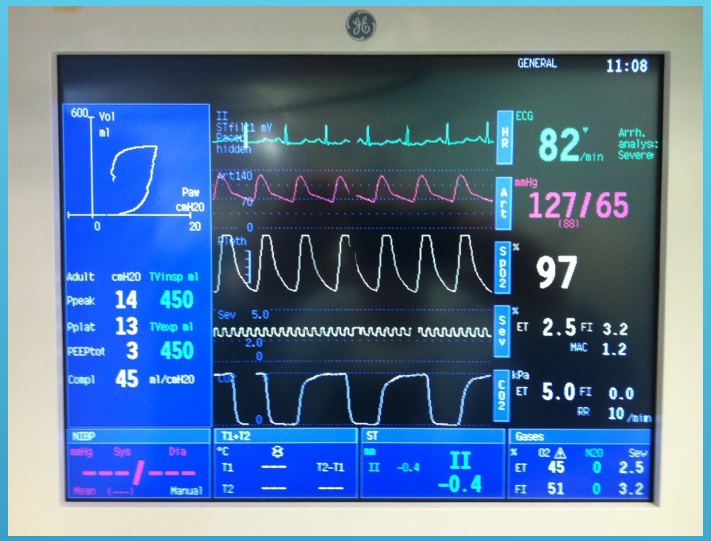
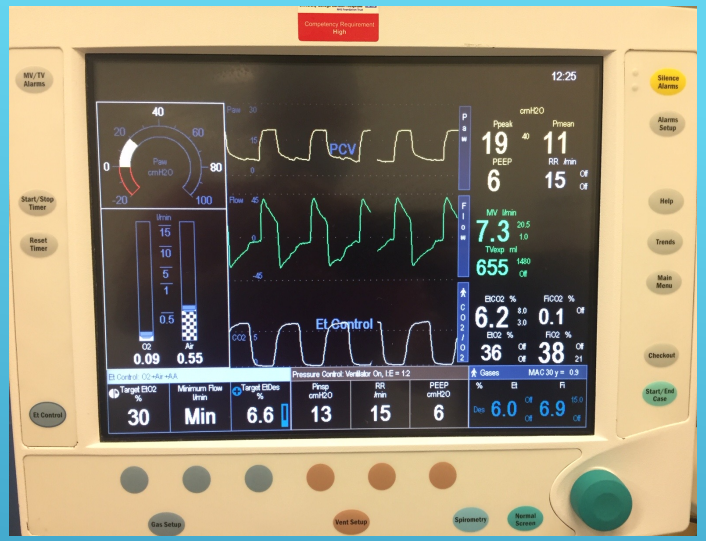
Further Information

TALK THROUGH MONITOR







- Airway
- Breathing and mechanical ventilator
- Circulation
- Drugs
- Others- stuff we need

TALK THROUGH MONITOR

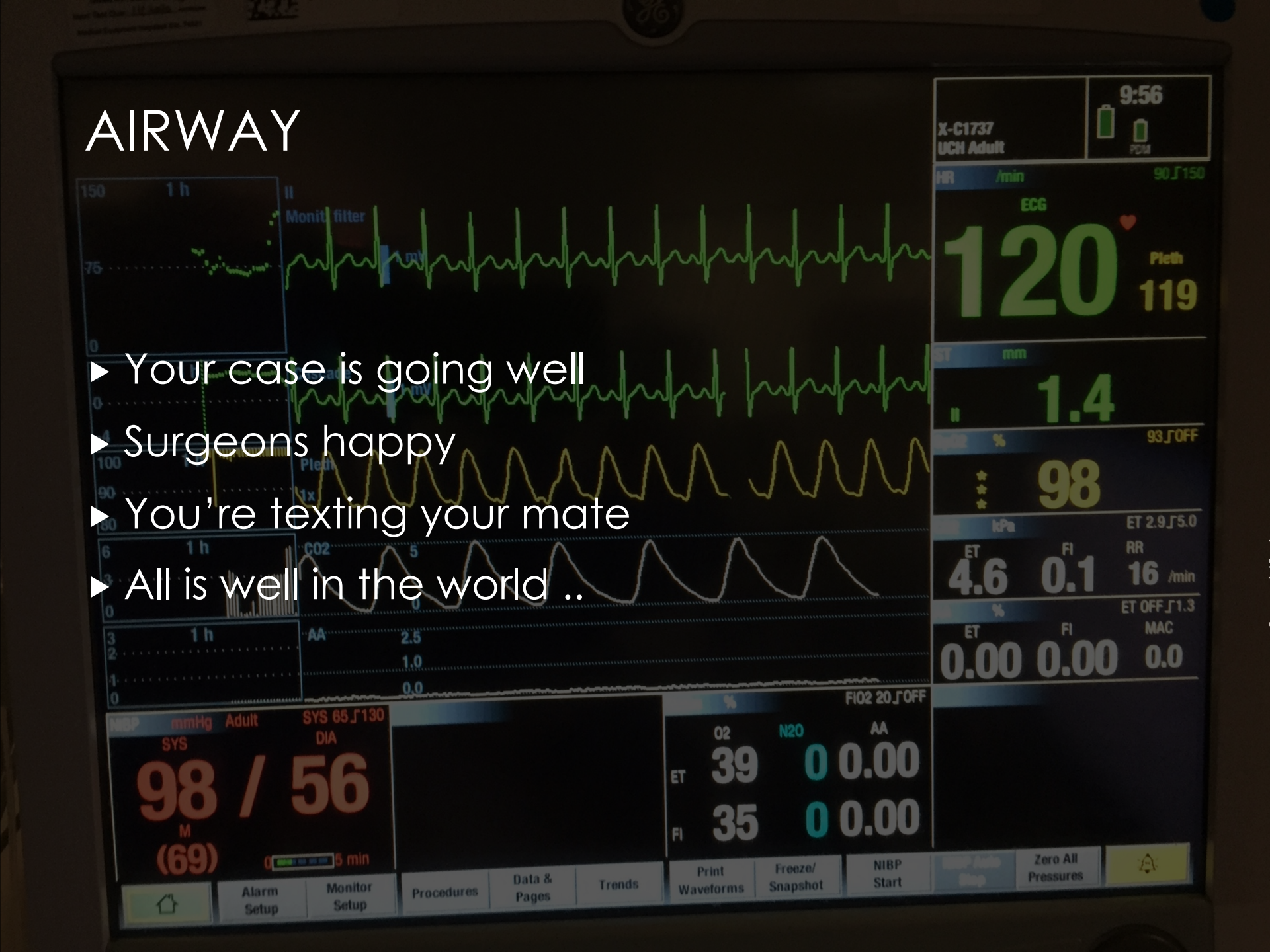
A
B
C
D
E

MONITOR TALK THROUGH

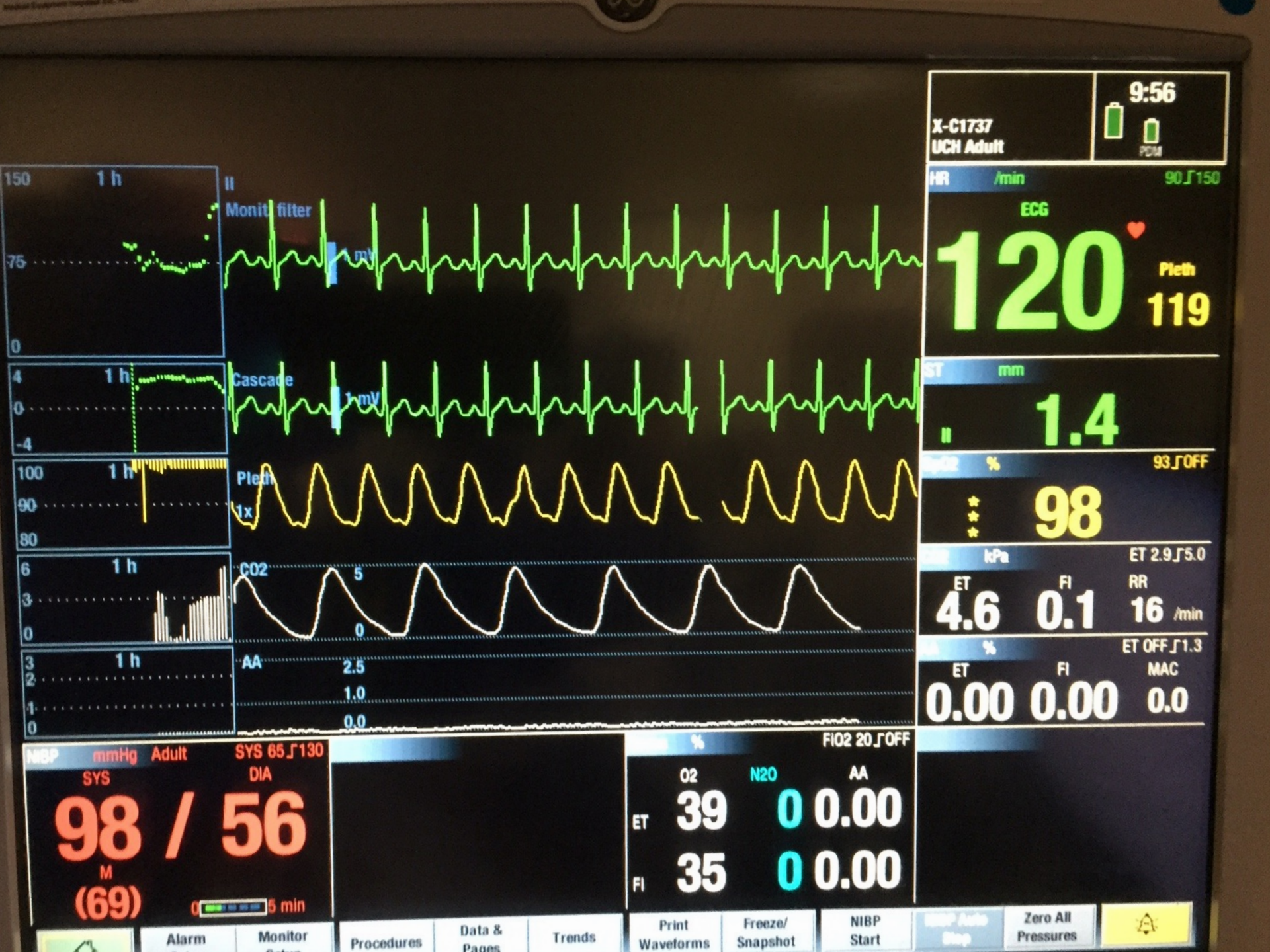
A
B
C
D
E

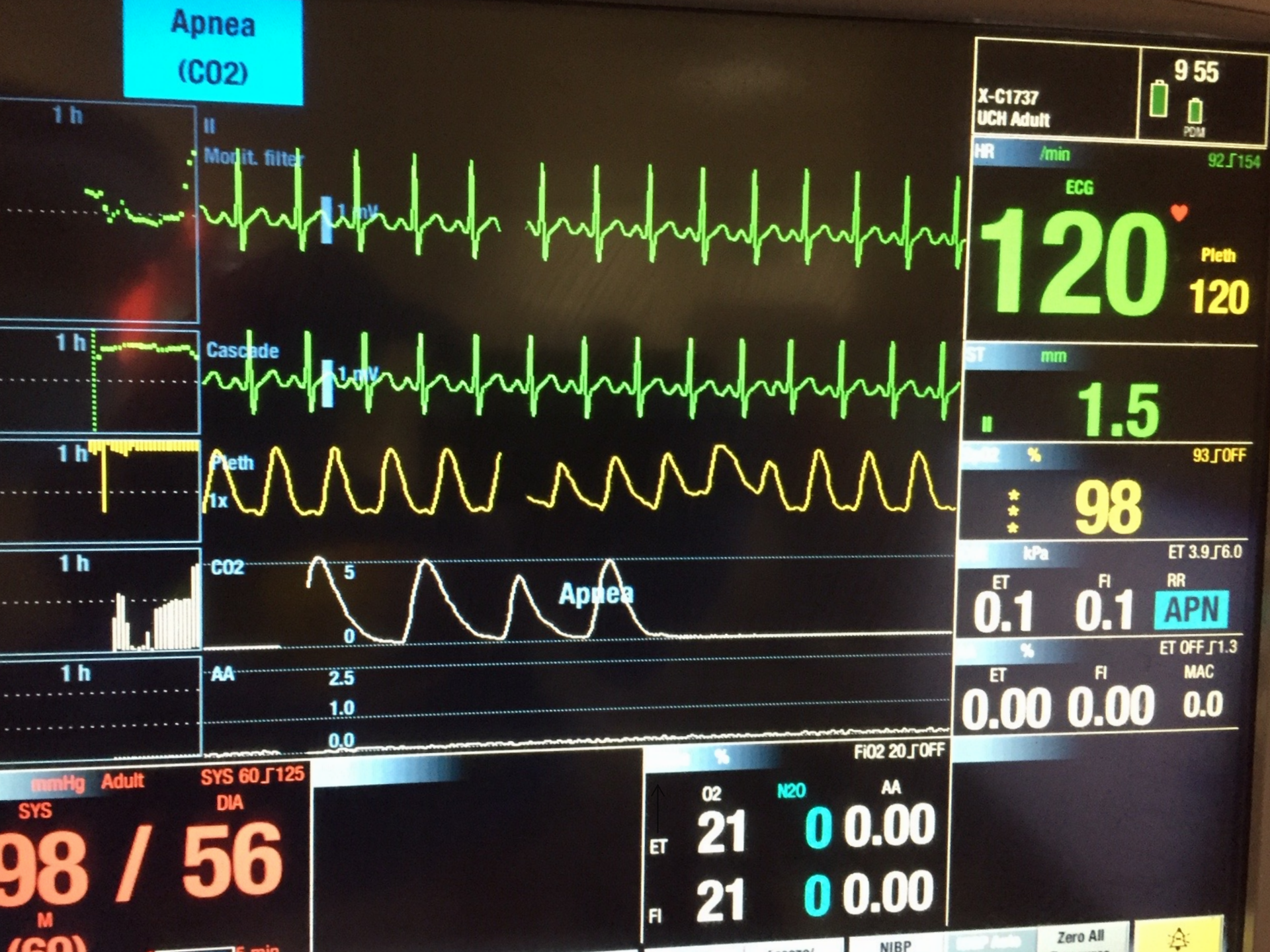
MONITOR TALK THROUGH

AIRWAY



- Your case is going well
- Surgeons happy
- You're texting your mate
- All is well in the world ..


X-C1737
UCH Adult
9:56
HR /min 90⌠150
ECG
120
Pleth
119
ST mm
1.4
93⌠OFF
98
kPa
ET 2.9⌠5.0
ET 4.6
FI 0.1
RR 16 /min
% ET OFF⌠1.3
ET 0.00
FI 0.00
MAC 0.0
NIBP mmHg Adult SYS 65⌠130
SYS 98 / DIA 56
M (69)
FIO2 20⌠OFF
O2 N2O AA
ET 39 0 0.00
FI 35 0 0.00
Alarm
Monitor
Procedures
Data & Pages
Trends
Print Waveforms
Freeze/ Snapshot
NIBP Start
Zero All Pressures


Apnea
(CO2)
X-C1737
UCH Adult
9 55
PDM
HR /min
92⌜154
ECG
120
Pleth
120
ST mm
1.5
93⌜OFF
98
kPa
ET 3.9⌜6.0
ET
FI
RR
0.1
0.1
APN
ET OFF⌜1.3
ET
FI
MAC
0.00
0.00
0.0
1 h
II
Monit. filter
1 mV
Cascade
1 mV
Pleth
1x
CO2
5
0
Apnea
AA
2.5
1.0
0.0
FiO2 20⌜OFF
O2
N2O
AA
ET
21
0
0.00
FI
21
0
0.00
mmHg
Adult
SYS 60⌜125
SYS
DIA
98 / 56
M
Zero All
NIBP

AIRWAY

- Shall we chill + carry on texting?
- No!
- Loss of ET C02 trace
- Not to be ignored!
- Options

AIRWAY

- Shall we chill + carry on texting?
- No!
- Loss of ET C02 trace
- Not to be ignored!
- Options
  - **Patient-** breathing has stopped / airway obstructed
    - Cardiac arrest / air embolus / CVS obstruction
  - **Airway** – kit obstructed / disconnected /circuit leak
  - **Anaesthesia Machine –** ventilator stopped


Me last week….
Airway
Adjuncts
ENT USE ONLY

BREATHING

- Get into theatre with patient having laparotomy
- Damn, you're not sure how to set ventilator!

BREATHING

- Laparotomy, intubated - not LMA

- **Select mode** – paralysed or not ie breathing on their own?
- **Select FiO_2** to give SaO_2 97% - start 50% then come down
- **Work out Tidal Volume**
  - Pressure Control – set pressure & watch the volume
  - Volume Control - the tidal volume you want, watch pressure
  - Pressure Support – set pressure & watch the volume/resp rate
- **Change Resp rate** to get desired $ETCO_2$
- **Give some PEEP** -eg 6cm

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MDCalc

MDCalc is a free online medical reference for healthcare professionals that provides point-of-care clinical decision-support tools, including medical calculators, scoring systems, and algorithms. MDCalc is also a mobile and web app. Wikipedia

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Headquarters: New York, New York, United States

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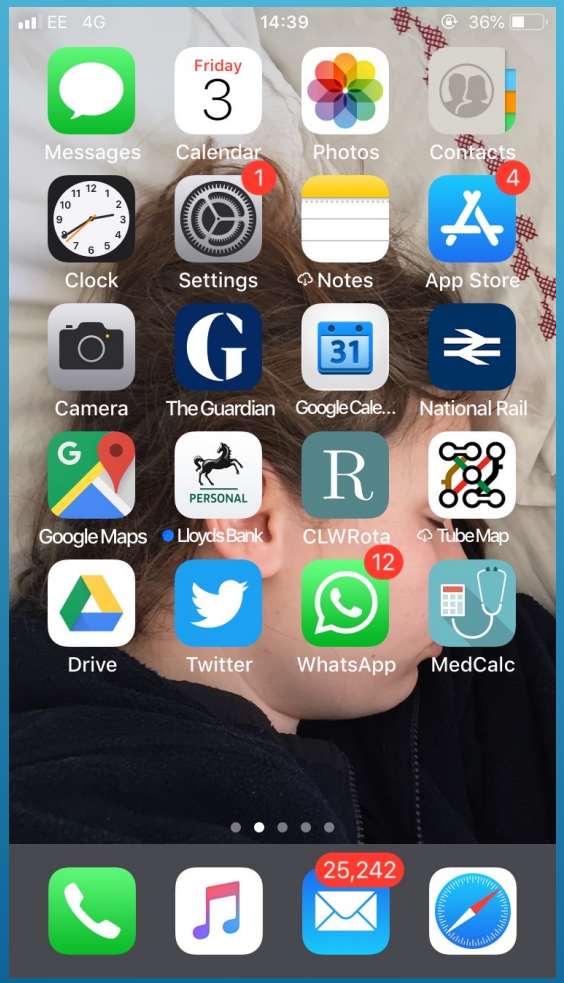
- **Creatinine Clearance (Cockcroft-Gault Equation)**
  Calculates CrCl according to the Cockcroft-Gault equation.
- **CHA_2DS_2-VASc Score for Atrial Fibrillation Stroke Risk**
  Calculates stroke risk for patients with atrial fibrillation, possibly better than the $CHADS_2$ Score.
- **Calcium Correction for Hypoalbuminemia**
  Calculates a corrected calcium level for patients with hypoalbuminemia.

BREATHING


EE 4G
14:39
36%
Messages
Calendar
Friday
3
Photos
Contacts
Clock
Settings
1
Notes
App Store
4
Camera
The Guardian
Google Cale...
National Rail
Google Maps
Lloyds Bank
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CLWRota
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MedCalc
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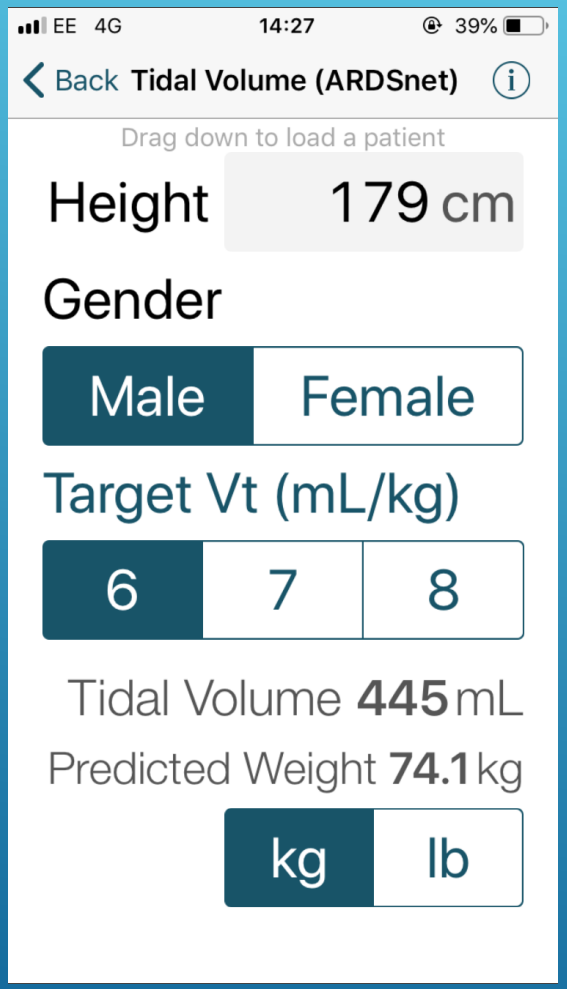
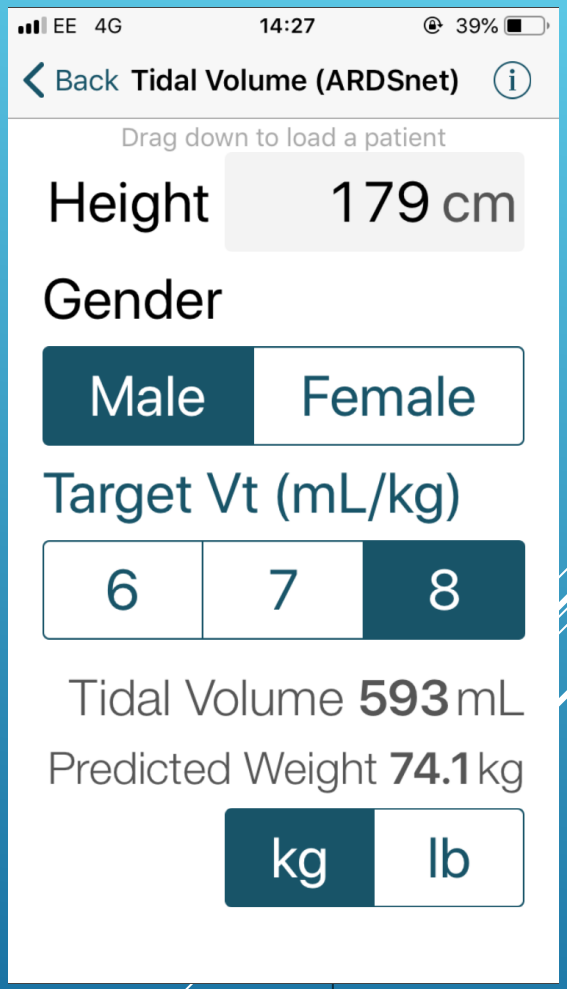

EE 4G
14:27
39%
Back
Tidal Volume (ARDSnet)
Drag down to load a patient
Height
179 cm
Gender
Male
Female
Target Vt (mL/kg)
6
7
8
Tidal Volume 445 mL
Predicted Weight 74.1 kg
kg
lb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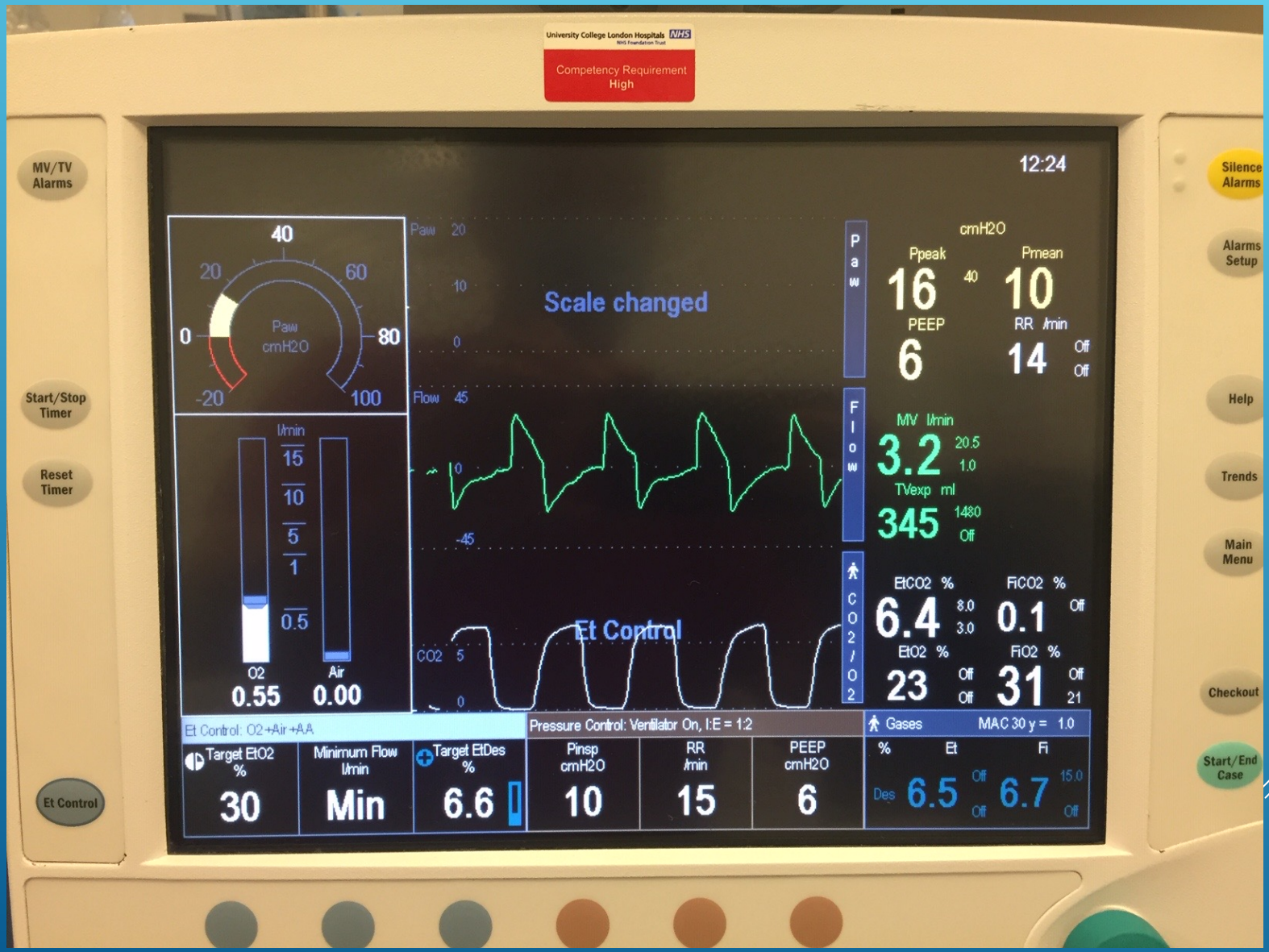
Tidal Volume 593 mL
Predicted Weight 74.1 kg
kg
lb

BREATHING

6-8ml/kg ideal body weight is Tidal Volume of 445-593 ml

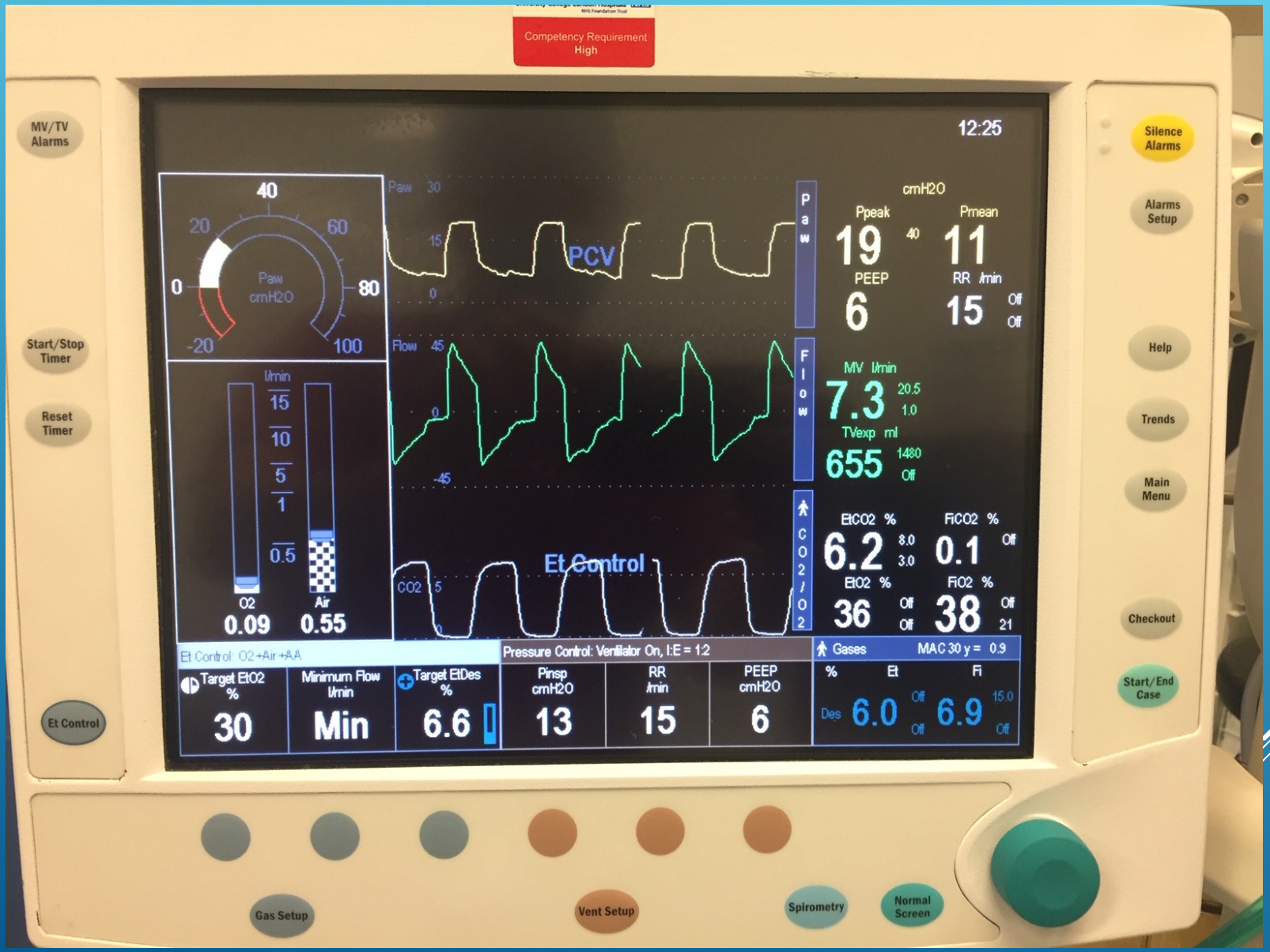
BREATHING

6-8ml/kg ideal body weight is Tidal Volume of 445-593 ml



BREATHING

6-8ml/kg ideal body weight is Tidal Volume of 445-593 ml



CIRCULATION

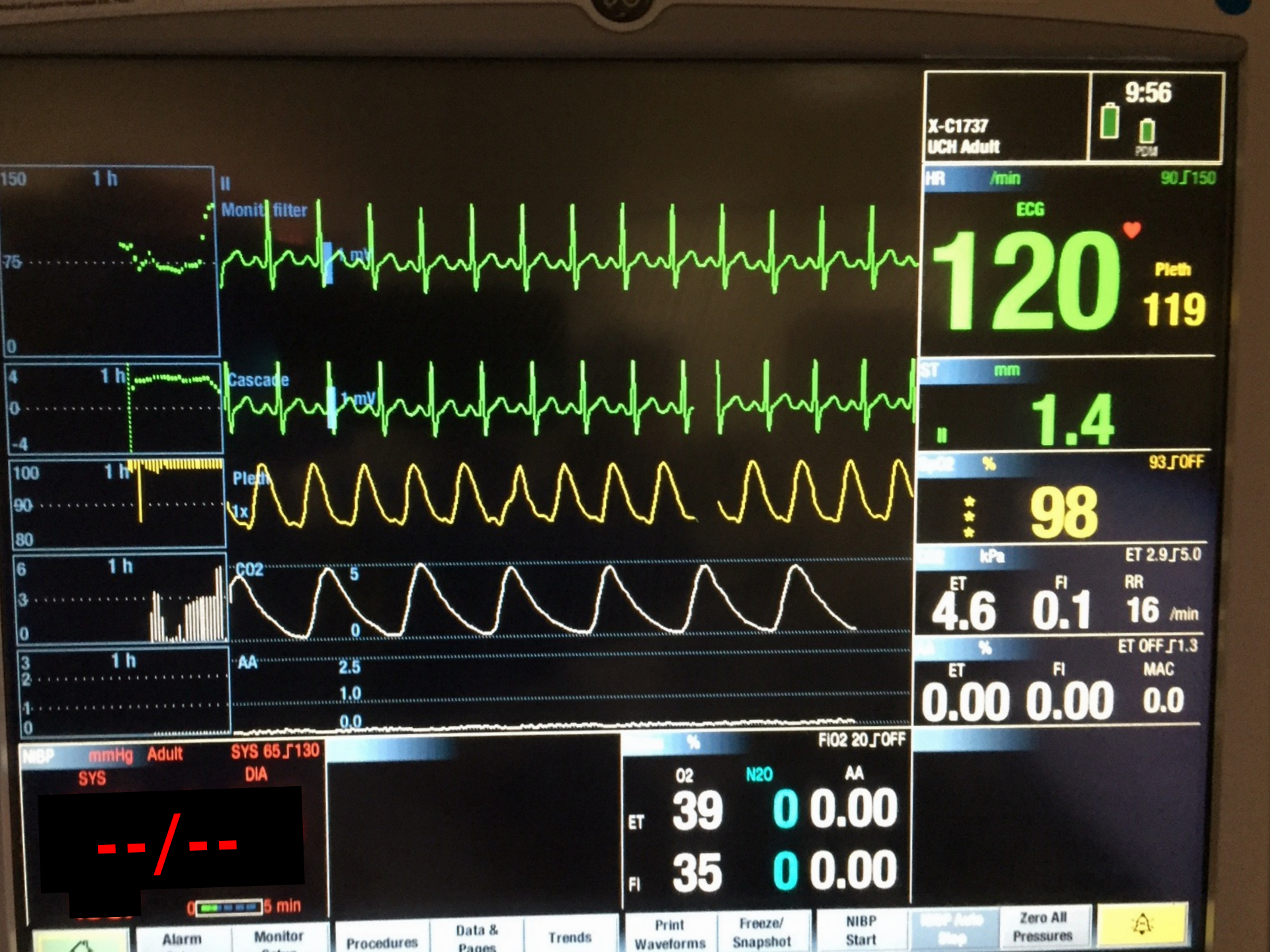
Sorted ventilator for patient having Laparotomy…

A, B ok
What about C?

Aims of CVS?

You vaguely recall…

- MAP = CO x SVR
- Low blood pressure is bad!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ET FI RR
4.6 0.1 16 /min
ET OFF ⌠1.3
ET FI MAC
0.00 0.00 0.0
II
Monit filter
Cascade
Pleth
CO2
AA
NIBP mmHg Adult
SYS DIA
SYS 65 ⌠130
--/--
5 min
FIO2 20 ⌠OFF
O2 N2O AA
ET 39 0 0.00
FI 35 0 0.00
Alarm
Monitor
Procedures
Data & Pages
Trends
Print Waveforms
Freeze/ Snapshot
NIBP Start
Zero All Pressures

CIRCULATION

a_1 adrenoceptor

- MAP = CO x SVR

SV x HR

β_1 adrenoceptor

SV

Preload /Venous return - fluid
Contractility β_1 adrenoceptor
Heart rate β_1 adrenoceptor
'afterload'

α_1 adrenoceptor
Metaraminol
10 mg in 20ml
Dose 0.5ml

β_1 adrenoceptor
Ephedrine
30mg in 10 ml
Dose 1ml

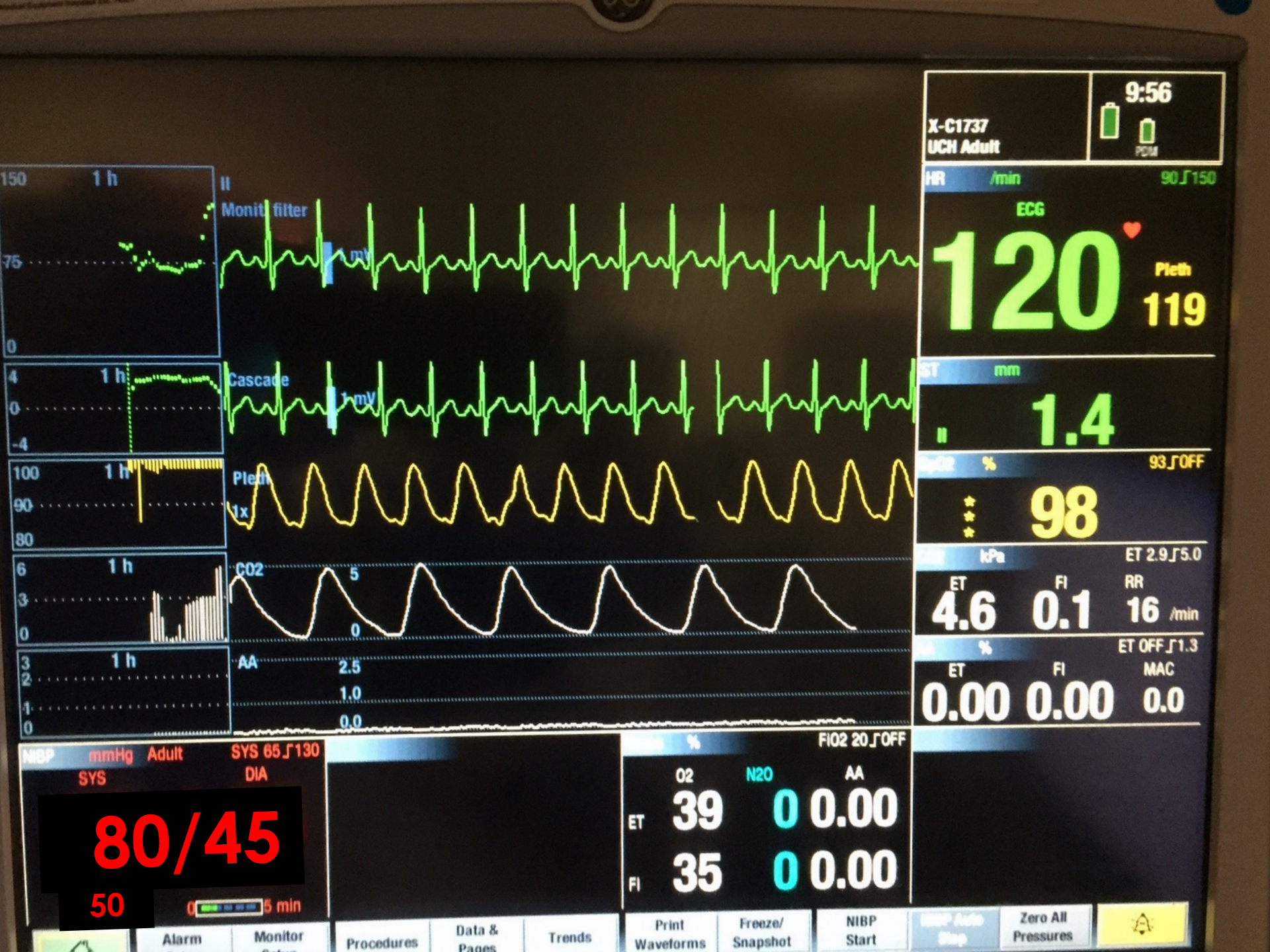
CIRCULATION

- MAP = CO x SVR
  - CO: SV x HR
    - SV: β_1 adrenoceptor
  - SVR: α_1 adrenoceptor

- Causes?

- Don't turn down the anaesthesia/volatile!
- Fluid challenge
- HR < 75 β_1 adrenoceptor = Ephedrine
- HR > 75 α_1 adrenoceptor = Metaraminol
- MAP 65mmHg* +

*observational data only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0.00 0.00 0.0
II
Monit filter
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SYS DIA
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FIO2 20 ⌠OFF
O2 N2O AA
ET 39 0 0.00
FI 35 0 0.00
Alarm
Monitor
Procedures
Data & Pages
Trends
Print Waveforms
Freeze/ Snapshot
NIBP Start
Zero All Pressures

CIRCULATION

What shall we do now?

operation about to start = stimulating

When do we need arterial line?

If you think of putting it in!

?AF

Big blood loss > 400 ml/hr

Long surgery > 2-3 hours

Going to ICU

When do we need cardiac output monitor or CVP?

Controversial

Me: Laparotomy- guides fluid Rx

WHAT WE'VE COVERED

- Classic Run through of a case
- Assessing the Patient: what worries me and should worry you!
- Monitor walk through
- Airway monitoring
- Breathing – how to set the ventilator
- Circulation issues and solutions

Questions?

Talk Pdf on the website….

Thank you all very much for coming

All the best in your future jobs

Do email us any feedback

Google ‘Rob Stephens UCL’