ADRENALINE

BOLUS DOSE IV

1:10,000 ADRENALINE
MiniJet (1 mg / 10 ml)

Add 1 ml to 9 ml Normal Saline
= 100 mcg adrenaline in 10 ml

Use 5 - 10 mcg (0.5 - 1 ml) boluses
titrate to effect

ADRENALINE INFUSION

1:1000 ADRENALINE
vial (1 mg / ml)

Add 3 mg (3 vials 1:1000)
to 50 mls N Saline (60 mcg/ml)

Run at 2 - 20 ml / hr
aim MAP > 70

PAEDIATRIC ARREST

IV: 0.01 mg/kg (10mcg/kg)
1/10,000 - 0.1 ml/kg IV ie. 10kg - 1ml
ETT - 1/1000 - 0.1ml/kg

ADULT ARREST

Non-shockable- 1mg immediately
Shockable - 1mg after 2nd shock
then after every second loop

ANAPHYLAXIS

Use IM adrenaline in advance of IV dosing

IM Adrenaline 1:1000 (1 mg/ml)
0.01 mg/kg to a maximum of 0.3-0.5 mg IM
[i.e. 0.01 ml/kg of 1:1000 adrenaline]

Can repeat 5 minutely if not better or worse

AGE	DOSE ADRENALINE 1:1000 vial	VOLUME 1:1000/ml
Adult	500 micrograms IM	0.5 ml
>12 yrs	500 micrograms IM	0.5 ml
6 -12 yrs	300 micrograms IM	0.3 ml
< 6 yrs	150 micrograms IM	0.15 ml

Don't forget to give normal saline 10-20ml/kg boluses for persistent hypotension.

Salbutamol nebulisers may help with ongoing bronchospasm.

Patients on beta-blockers who do not respond to adrenaline may benefit from glucagon IV (20 to 30 mcg/kg up to a maximum of 1 mg).

IV adrenaline may be given if there is no resolution despite multiple doses of IM adrenaline — experts vary in their recommendations of how to give this. APLS guidelines suggest 0.1-5.0 micrograms/kg/min.

If resistant, I prefer this simple approach:

1. grab 1 mg of adrenaline 1:10,000 from the resus trolley
2. inject into 1000 ml bag of normal saline
3. start infusion at 1 ml/min, which is 1 microgram/min
   (this would be 0.1 micrograms/kg/min for a 10 kg child)
4. increase rate until resolution of severe anaphylaxis
5. DON"T FORGET TO TURN OFF

ISOPRENALINE

Bradycardia with poor perfusion. Most commonly for CHB

Syringe Driver
Isoprenaline 1 mg / 50 ml (20 mcg / ml)

Use Isoprenaline hydrochloride 1 mg in 5 ml ampoules

Dilute 1 mg (5 ml) up to 50 ml with 5% Dextrose

Give 20 µg (1ml), repeated according to clinical response, followed by an infusion at 1–4 µg/min (3-12 ml/hr)

	DOSE RANGE	RATE OF INFUSION (Syringe Driver)
50 ml syringe	1 mcg / min	3 ml / hr
	2 mcg / min	6 ml / hr
	4 mcg / min	12 ml / hr

1. Side effects include palpitations, headache, flushing of the skin, angina, nausea, vomiting, tremor, dizziness, weakness and sweating.

2. If heart rate exceeds 80 or patient develops chest pain or other arrhythmias decrease dose or temporarily discontinue infusion.

3. Administer with caution in the elderly, diabetic, hyperthyroid, patients with ischaemic heart disease or concurrently with other inotropes.

4. Administer via a central line or into a large peripheral venous line (extreme caution peripherally because of the risk of vasoconstriction, ischaemic pain and local necrosis).

GTN INFUSION

Indications

1. Ischaemic chest pain or unstable angina not adequately relieved by oral, sublingual or transdermal nitrates,
2. Acute left ventricular failure,
3. Acute hypertension.

Syringe Driver
GTN 50 mg / 50 ml (1000 mcg/ml)

- Use GTN 50 mg in 10 ml ampoule
- Dilute 50 mg (10 ml) up to 50 ml with 5% Dextrose
- Commence at 25 - 50 mcg/min (1.5 - 3.0 ml/hr)
- Increase by 1 ml/hr every 5-10 mins according to clinical response

	DOSE RANGE	RATE OF INFUSION (Syringe Driver)
50 ml syringe	50 mcg/min	3 ml/hr
	100 mcg/min	6 ml/hr
	150 mcg/min	9 ml/hr
	200 mcg/min	12 ml/hr

See over for precautions

GTN INFUSION

Precautions and Side Effects

1. Up to 80% of active agent may be absorbed by PVC giving sets or IV fluid bags.

Absorption increases with increased concentration and increased exposure time to the plastic. Plastic syringes and minimum volume tubing reduce absorption but the dose may still need to be gradually increased. Use clinical response rather than calculated dose to get a dose that is appropriate for the patient.

2. Headache is common. Other CNS effects can include restlessness, dizziness, apprehension, vomiting. CVS side effects include hypotension, reflex tachycardia, palpitations and circulatory collapse.

3. Usual starting dose is 50 µg/min but some patients, particularly those with low blood pressure or pulmonary oedema, may require a lower starting dose.

4. Monitor blood pressure at least 15 minutely until stable.

Once a blood pressure response is noted increments should be made more cautiously. Titrate rate against patient's tolerance and therapeutic response rather than a precise dose. Cease infusion if the systolic blood pressure falls below 95 mmHg.

5. Avoid skin contact with concentrated solution when preparing infusion.

See over for infusion rates

MgSO4 Infusion

Infusion for prevention of eclampsia

Syringe Driver - Magnesium 9.88g (40 mmol) / 20 ml (0.5 g/ml)

For Pre-Eclampsia, use 4 ampoules of Magnesium Sulphate (2.47 g [10 mmol] per 5 ml ampoule

Use 4 ampoules (9.88 g) of Magnesium Sulphate undiluted (20 ml)

Give a loading dose of approx. 4 g (8 ml) over 20 min

Follow the loading dose with an infusion of 1 g/hr (2 ml/hr)

If further seizures occur, give 2 g (4 ml) over 5 minutes (48 ml/hr for 5 minutes)

		DOSE RANGE	RATE OF INFUSION (Syringe Driver)
50 ml syringe	Loading Dose	4 g (8 ml)	24 ml / hr for 20 mins only
	Maintenance	1 g / hr	2 ml / hr
	If further seizures	2 g (4 ml)	48 ml / hr for 5 mins only

SEE OVER FOR PRECAUTIONS

MgSO4 Infusion

Precautions and Side Effects

1. Urine output should be maintained at > 30 ml/hr.

   Caution with fluid administration should be exercised to avoid fluid overload.

2. Magnesium toxicity is suggested by:

- The disappearance of the patella reflex (**check hourly**). Disappearance of the patella reflex mandates cessation of the infusion.

  Serum magnesium should be measured if possible.

- Respiratory depression (<12/min),

  Respiratory rate should ideally be maintained at >16/min and the infusion should be definitely be ceased if the rate drops below 12/min.

- Bradycardia (HR < 60/min) may result from complete heart block.

Treatment of Mg overdose

- Cease infusion.

  - Intravenous administration of 5-10 mEq of 10% Calcium Gluconate (10 - 20 ml) to reverse respiratory depression or heart block.

SEE OVER FOR DOSING

PRE-RSI CHECKLIST

(can do this whilst pre-oxygenating)

SET UP

Monitoring - BP, ECG, SpO2, ETCO2	CHECK
Nasal Cannulae at 15l/min PLUS Mask O2	CHECK
Pre-oxygenation for FOUR minutes	CHECK
Suction checked working & available	CHECK
Position optimised	CHECK
Ramping needed?	CHECK

IV & DRUGS

IV Cannula connected to fluid & running	CHECK
NIBP on contralateral arm and BP seen	CHECK
Spare cannula in situ	CHECK
INDUCTION AGENT drawn up, dose correct	CHECK
SUX or ROC drawn up, dose correct	CHECK
VASOPRESSORS drawn up, labelled	CHECK
POST INTUBATION drugs ready & labelled	CHECK

INTUBATION EQUIPMENT

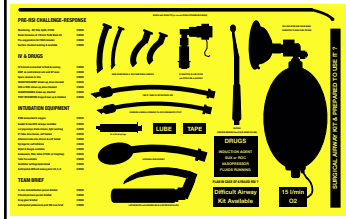
BVM connected to oxygen	CHECK
PEEP valve for BMV available	CHECK
Guedel airways & two NPO airways ready	CHECK
Laryngoscope blade chosen, light working	CHECK
ET tube size chosen, cuff tested	CHECK
Alternate tube size chosen & cuff tested	CHECK
Syringe for cuff inflation	CHECK
Stylet & Bougie available	CHECK
Gooseneck, filter, inline ETCO2 (or EasyCap)	CHECK
Tube Tie available	CHECK
Ventilator settings determined	CHECK

TEAM BRIEF

In-line immobilisation person briefed	CHECK
Cricoid pressure person briefed	CHECK
Drug giver briefed	CHECK
Difficult airway plans A/B/C/D discussed	CHECK
Post RSI brief & ongoing anaesthesia ready	CHECK
Anaesthetic assistant ready	CHECK

DIFFICULT AIRWAY KIT READY TO USE CHECK

[see overleaf for Plans A-B-C-D]



PREPARE TEAM & EQUIPMENT

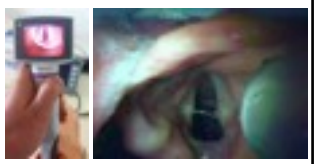
RSI dump kit and checklist
RSI drugs in ED fridge
Airway trolley in Theatre

PLAN A
Initial Intubation Strategy

DIRECT LARYNGOSCOPY

PLAN B
Alternative Intubation Strategy

KING VISION VL



PLAN C
Maintenance of Oxygenation & Ventilation

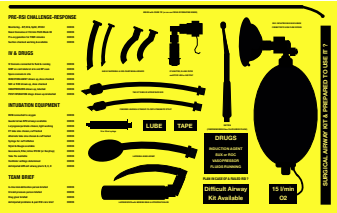
BMV or LMA
Classic or Supreme LMA or Intubating LMA (AirQ II)

PLAN D
Rescue techniques "Can't Intubate Can't Ventilate"

SURGICAL AIRWAY

Bags 1 - 3 on airway trolley

modified from www.das.co.uk



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PLAN B
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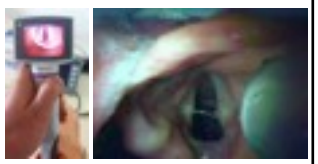

PLAN C
Maintenance of Oxygenation & Ventilation

BMV or LMA
Classic or Supreme LMA or Intubating LMA (AirQ II)

PLAN D
Rescue techniques "Can't Intubate Can't Ventilate"

SURGICAL AIRWAY

Bags 1 - 3 on airway trolley

modified from www.das.co.uk

PRE-RSI CHECKLIST

(can do this whilst pre-oxygenating)

SET UP

Monitoring - BP, ECG, SpO2, ETCO2	CHECK
Nasal Cannulae at 15l/min PLUS Mask O2	CHECK
Pre-oxygenation for FOUR minutes	CHECK
Suction checked working & available	CHECK
Position optimised	CHECK
Ramping needed?	CHECK

IV & DRUGS

IV Cannula connected to fluid & running	CHECK
NIBP on contralateral arm and BP seen	CHECK
Spare cannula in situ	CHECK
INDUCTION AGENT drawn up, dose correct	CHECK
SUX or ROC drawn up, dose correct	CHECK
VASOPRESSORS drawn up, labelled	CHECK
POST INTUBATION drugs ready & labelled	CHECK

INTUBATION EQUIPMENT

BVM connected to oxygen	CHECK
PEEP valve for BMV available	CHECK
Guedel airways & two NPO airways ready	CHECK
Laryngoscope blade chosen, light working	CHECK
ET tube size chosen, cuff tested	CHECK
Alternate tube size chosen & cuff tested	CHECK
Syringe for cuff inflation	CHECK
Stylet & Bougie available	CHECK
Gooseneck, filter, inline ETCO2 (or EasyCap)	CHECK
Tube Tie available	CHECK
Ventilator settings determined	CHECK

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Drug giver briefed	CHECK
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Post RSI brief & ongoing anaesthesia ready	CHECK
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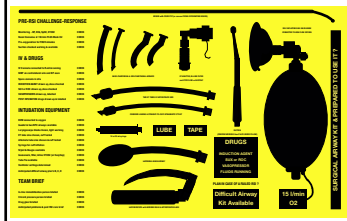
DIFFICULT AIRWAY KIT READY TO USE CHECK

[see overleaf for Plans A-B-C-D]



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PLAN A

Initial Intubation Strategy

DIRECT LARYNGOSCOPY

PLAN B

Alternative Intubation Strategy

KING VISION VL

PLAN C

Maintenance of Oxygenation & Ventilation

BMV or LMA

Classic or Supreme LMA
or Intubating LMA (AirQ II)

PLAN D

Rescue techniques
"Can't Intubate
Can't Ventilate"

SURGICAL AIRWAY

Bags 1 - 3 on airway trolley

modified from www.das.co.uk

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(can do this whilst pre-oxygenating)

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Anaesthetic assistant ready	CHECK

DIFFICULT AIRWAY KIT READY TO USE CHECK

[see overleaf for Plans A-B-C-D]

RICHMOND AGITATION SEDATION SCALE

Term	Description	Score
COMBATIVE	overtly combative, violent, immediate danger to self/others	+4
VERY AGITATED	pulls or removes tube(s), catheter(s), aggressive	+3
AGITATED	frequent non-purposeful movement, fights ventilator	+2
RESTLESS	anxious but movements not aggressive or vigorous	+1
ALERT & CALM	You, the epitome of cool	0
DROWSY	Not fully alert, but sustained awakening to voice (**eyes open > 10s**)	-1
LIGHT SEDATION	briefly awakens with **eye contact to voice < 10s**	-2
MODERATE SEDATION	movement or eye opening to voice **but no eye contact**	-3
DEEP SEDATION	no response to voice, but **movement or eye opening to physical stimulation**	-4
UNROUSABLE	**no response to voice or physical stimulation**	-5

CONSIDER	ANAESTHETIC RISK		
MENTAL HEALTH SAFETY/RISK	**LOW** thin, fit, fasted	**MEDIUM** ASA II - III	**HIGH** old, sick, difficult airway OSA etc
LOW flat, depressed, no Hx violence, low risk suicidal patient “happy” drunk thought disordered but compliant	low risk reassurance mild anxiolytic	restraint monotherapy longer acting agents 1:1 nursing	avoid drugs if possible orientation reassurance 1:1 nursing
MEDIUM intoxicated / disinhibited unpredictable delusional with poor insight anxious +++	sedation needed single agent antipsychotic (+/- benzo)	as above heavier sedation airway adjuncts to hand	airway risk non-pharmacy preferred short acting BDZ tincture of time
HIGH violence /weapons physical threats persecutory delusions around care “big guy” whom you cannot restrain	as above then ketamine sedation or RSI/ETT	as orange but delay until fasted await retrieval?	balance of minimal sedation & own airway vs GA/ETT

RAPID ASSESSMENT

Airway - Breathing - Circulation
Disability, Drugs?
Environment ECG
Full Bladder?
Glucose?
Head Injury?

NO IV ACCESS

oral olanzapine 10-20mg stat
and/or
IMI midazolam 5-10mg
and/or
IMI ketamine 4mg/kg

IV ACCESS OBTAINED

IV midazolam 2-5mg
and/or
IV haloperidol 5-10mg
and/or
IV ketamine 1-1.5mg/kg

repeat every 5-10 mins,
target RASS 0 to -3

ISOPRENALINE

Bradycardia with poor perfusion.
Most commonly for CHB

Syringe Driver
Isoprenaline 1 mg / 50 ml (20 mcg / ml)

Use Isoprenaline hydrochloride 1 mg in 5 ml ampoules

Dilute 1 mg (5 ml) up to 50 ml with 5% Dextrose

Give 20 µg (1ml), repeated according to clinical response, followed by an infusion at 1–4 µg/min (3-12 ml/hr)

	DOSE RANGE	RATE OF INFUSION (Syringe Driver)
50 ml syringe	1 mcg / min	3 ml / hr
	2 mcg / min	6 ml / hr
	4 mcg / min	12 ml / hr

See over for side effects

ISOPRENALINE

1. Side effects include palpitations, headache, flushing of the skin, angina, nausea, vomiting, tremor, dizziness, weakness and sweating.

2. If heart rate exceeds 80 or patient develops chest pain or other arrhythmias decrease dose or temporarily discontinue infusion.

3. Administer with caution in the elderly, diabetic, hyperthyroid, patients with ischaemic heart disease or concurrently with other inotropes.

4. Administer via a central line or into a large peripheral venous line (extreme caution peripherally because of the risk of vasoconstriction, ischaemic pain and local necrosis).

See over for infusion regimen

MORPH & MIDAZ

Syringe Driver 30 ml
Morphine 30 mg
& Midazolam 30mg

Use Morphine 15 mg/ml *or* Morphine 10 mg/ml and Midazolam 15 mg/3 ml.

Dilute 30 mg Morphine plus 30 mg Midazolam up to 30 ml with Normal Saline (*or* 50mg + 50mg made up to 50 ml with N saline)

Administer a loading dose of 2 - 10 ml

Commence infusion at 2.5 - 5 ml/hr

	DOSE RANGE	RATE OF INFUSION - Syringe Driver
30 ml Syringe	2.5 + 2.5 mg/hr	2.5 ml/hr
	5.0 + 5.0 mg/hr	5 ml/hr
	10 + 10 mg/hr	10 ml/hr
	15 + 15 mg/hr	15 ml/hr

MORPH & MIDAZ

Precautions and Side Effects

Side effects include hypotension, CNS and respiratory depression

Special Notes

Adjust rate according to clinical response.

KETAMINE

Ketamine Induction

1-2 mg/kg IV
5-10mg/kg IM

Ketamine Sedation

0.2-0.5 mg/kg IV sedation
2-4mg/kg IM sedation

Ketamine Infusion

0.25mg/kg/hour

Ketamine/Midazolam Infusion

200mg Ketamine : 50mcg fentanyl
in 50ml run @ 2-5ml/hr

KETAMINE

INTRA NASAL

Ketamine IN Analgesia

0.5 - 1.0 mg/kg

Ketamine IN Sedation

up to 10 mg/kg

USE THE MAD
(mucosal atomisation device)

PRE-RSI CHECKLIST

(can do this whilst pre-oxygenating)

SET UP

Monitoring - BP, ECG, SpO2, ETCO2	CHECK
Nasal Cannulae at 15l/min PLUS Mask O2	CHECK
Pre-oxygenation for FOUR minutes	CHECK
Suction checked working & available	CHECK
Position optimised	CHECK
Ramping needed?	CHECK

IV & DRUGS

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VASOPRESSORS drawn up, labelled	CHECK
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INTUBATION EQUIPMENT

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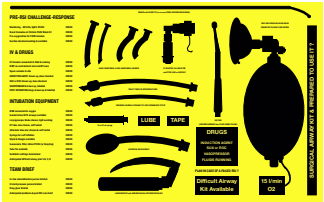
DIFFICULT AIRWAY KIT READY TO USE CHECK

[see overleaf for Plans A-B-C-D]



PREPARE TEAM & EQUIPMENT

RSI dump kit and checklist
RSI drugs in ED fridge
Airway trolley in Theatre

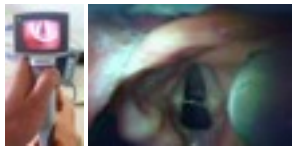
PLAN A
Initial Intubation Strategy

DIRECT LARYNGOSCOPY

Position - Bougie - Blade

PLAN B
Alternative Intubation Strategy

KING VISION VL



PLAN C
Maintenance of Oxygenation & Ventilation

BMV or LMA

Classic or Supreme LMA
or Intubating LMA (AirQ II)

PLAN D
Rescue techniques CICV crisis

SURGICAL AIRWAY

Bags 1 - 3 on airway trolley