

# DRUG ERROR: METARAMINOL BOLUS

MODULE: PATIENT SAFETY

TARGET: ALL ANAESTHETISTS

## BACKGROUND:

Medication errors present a particular hazard to patients. Anaesthetists handle and administer numerous drugs with potentially significant adverse effects, often in a distraction-filled environment. There has been a relatively poor safety culture with regard to drug error prevention in anaesthesia although this is improving. This scenario is based around three separate but similar serious untoward incidents (SUIs) that occurred at our Trust, where a large bolus of Metaraminol was inadvertently administered during general anaesthesia. These SUIs led to systemic changes in the way Metaraminol was procured, packaged, handled and drawn up in theatres and critical care areas.

**RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM**

IG_BS_04	Demonstrates safe practice in selecting, checking, drawing up, diluting, labelling and administering of drugs
IG_BS_10	<p>In respect of airway management:</p> <ul style="list-style-type: none"> <li>• Demonstrates optimal patient position for airway management</li> <li>• Manages airway with mask and oral/nasopharyngeal airways</li> <li>• Demonstrates hand ventilation with bag and mask</li> <li>• Able to insert and confirm placement of a Laryngeal Mask Airway</li> <li>• Demonstrates correct head positioning, direct laryngoscopy and successful nasal/oral intubation techniques and confirms correct tracheal tube placement</li> <li>• Demonstrates proper use of bougies</li> <li>• Demonstrates correct securing and protection of LMAs/tracheal tubes during movement, positioning and transfer</li> <li>• Correctly conducts RSI sequence</li> <li>• Correctly demonstrates the technique of cricoid pressure</li> </ul>
IO_BS_08	Communicates with the theatre team in a clear unambiguous style
IO_BS_09	Able to respond in a timely and appropriate manner to events that may affect the safety of patients [e.g. hypotension, massive haemorrhage][S]
ES_BS_03	Manages rapid sequence induction in the high risk situation of emergency surgery for the acutely ill patient
CI_BK_09	Unexpected hypertension
CI_BK_11	<p>Arrhythmias:</p> <ul style="list-style-type: none"> <li>• ST segment changes</li> <li>• Sudden bradycardia</li> <li>• Ventricular ectopics</li> </ul>
CI_BK_22	Adverse drug reactions
CI_BS_01	Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making and maintenance of high situation awareness]
CI_BS_02	Demonstrates the ability to recognise early a deteriorating situation by careful monitoring
CI_BS_03	Demonstrates the ability to respond appropriately to each incident listed above
CI_BS_04	Shows how to initiate management of each incident listed above
CI_BS_05	Demonstrates ability to recognise when a crisis is occurring
CI_BS_06	Demonstrates how to obtain the attention of others and obtain appropriate help when a crisis is occurring
CI_IS_01	Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals

## INFORMATION FOR FACULTY

### LEARNING OBJECTIVES:

- Learn how to approach the management of unexpected hypertension under anaesthesia
- Understand the factors that can contribute to drug errors occurring
- Understand how systems can be put in place to reduce the risk of harm to patients from drug errors

### SCENE INFORMATION:

- Location: Anaesthetic Room / Theatre
- Expected Duration of Scenario: 20 mins
- Expected Duration of Debrief: 40 mins

### EQUIPMENT & CONSUMABLES

Manikin  
 Stocked airway trolley  
 Simulated drugs for induction (thiopentone/propofol, suxamethonium, fentanyl, atracurium), anti-emesis (ondansetron, dexametasone), analgesia (paracetamol, diclofenac, tramadol) antibiotics (augmentin, gentamicin), emergency (suxamethonium, atropine, metaraminol, ephedrine) Empty metaraminol vial (10mg in 1ml)  
 Surgical drapes  
 Simulated surgical equipment (e.g. instrument trolley, diathermy, suction etc)

### PERSONS REQUIRED

Anaesthetic Junior Trainee  
 Anaesthetic Assistant  
 Anaesthetic Senior Trainee  
 Scrubs Nurse (Optional)  
 Surgeon (Optional)  
 Runner (Optional)

### PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)

You are about to anaesthetise this 52 year old patient for a open appendicectomy. They are usually fit and well, but have had 5 days of right iliac fossa pain, with vomiting and fevers. They have a raised white cell count and CRP. Ultrasound is suggestive of an appendix inflammatory mass, and so has opted for an open approach (rather than laparoscopic).

The patient is fasted, but has had vomiting in the last 2 hours. There are no allergies known. Their airway examination is unremarkable.

Please conduct their anaesthetic.

### 'VOICE OF MANIKIN' BRIEFING:

You are a 52 year old who is usually well with no medical problems. Over the last five days you've had worsening pain in the right lower quarter of your abdomen. In the last 2 days this has worsened significantly and you've had fevers and vomiting.

You have no allergies and take no regular medications.

You are about to undergo an appendicectomy. You haven't been offered any analgesics, and you are in considerable pain.

**'IN SCENARIO PERSONNEL' BRIEFING:**

**ANAESTHETIC ASSISTANT**

Help the anaesthetist induce the patient, and then help the theatre team prepare to start operating.

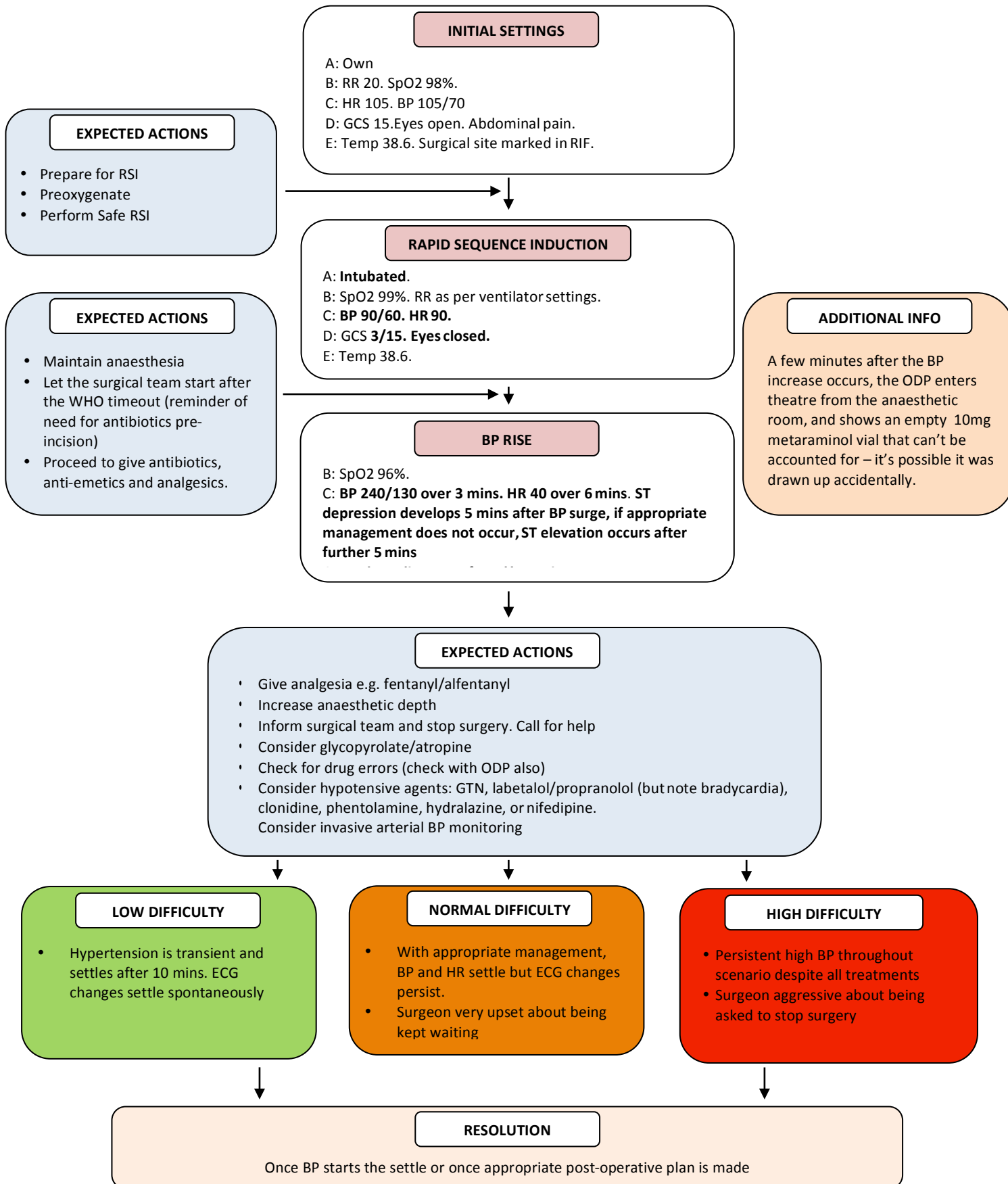
Once the blood pressure problems occur, if not instructed to do so, leave the theatre area to 'check the drug vials'. Return after a few minutes with the empty 10mg metaraminol vial and explain that it can't be accounted for amongst all the empty vials it has possibly been drawn up and administered in error.

**SURGICAL TEAM**

Once induction has take place, prep and drape the patient in preparation for surgery. Once the WHO timeout has been completed the surgeon starts.

Early during the surgery the blood pressure will rise and heart rate fall; continue the surgery unless the anaesthetist asks you to stop. If this occurs, wait around one minute before becoming impatient to restart

CONDUCT OF SCENARIO



# ANAESTHETIC RECORD SHEET



**PATIENT DETAILS / ADDRESSOGRAPH**  
 Hospital No. \_\_\_\_\_

SURNAME: **Leslie Warren**  
 (Block Letters)

FORENAMES: **52 years old**

Address: \_\_\_\_\_  
 Ward/Hosp: \_\_\_\_\_

DOB: \_\_\_\_\_ Sex: M / F

Procedure(s) proposed:  
**Open Appendicectomy**

CEPOD CLASS: ELECTIVE / SCHEDULED / URGENT / EMERGENCY

**Anaesthetist's preoperative assessment by**

Name: \_\_\_\_\_ Grade:  Cons  AS  SG  Trainee \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Signature \_\_\_\_\_

<p><b>Anaes / Surg history:</b></p> <p>No previous GAs</p> <p><b>Medical history:</b></p> <p>No medical history of note</p> <p>5 days of pain, 2 days of vomiting and fevers                  Vomited 2 hours ago</p> <p>VTE Risk: <input type="checkbox"/> High <input type="checkbox"/> Low</p>	<p>O/E</p> <p>Unremarkable</p> <p style="text-align: center;"><b>Airway Assessment</b></p> <p>Mouth Opening:                  MP Score: 1 2 3 4</p> <p>Jaw: Good mouth opening                  Neck: Neck ROM OK</p> <p style="text-align: center;">TEETH</p> <table style="margin: auto; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">8</td><td style="padding: 0 5px;">7</td><td style="padding: 0 5px;">6</td><td style="padding: 0 5px;">5</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">1</td> <td style="border-left: 1px solid black; padding: 0 5px;">1</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">5</td><td style="padding: 0 5px;">6</td><td style="padding: 0 5px;">7</td><td style="padding: 0 5px;">8</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">8</td><td style="padding: 0 5px;">7</td><td style="padding: 0 5px;">6</td><td style="padding: 0 5px;">5</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">1</td> <td style="border-left: 1px solid black; padding: 0 5px;">1</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">3</td><td style="padding: 0 5px;">4</td><td style="padding: 0 5px;">5</td><td style="padding: 0 5px;">6</td><td style="padding: 0 5px;">7</td><td style="padding: 0 5px;">8</td> </tr> </table> <p style="font-size: small; margin-top: 5px;">X = missing    L = loose    B = bridge                  C = caps / crowns    D = damaged</p>	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	<p><b>ASA</b></p> <p>BP: _____</p> <p>HR: _____</p> <p>Temp: _____</p> <p>Weight: _____</p> <p>Height: _____</p> <p>BMI: _____</p> <p>Smoke: _____</p> <p>Alcohol: _____</p> <p><b>Apfel Score</b></p>
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<p><b>NBM since</b></p> <p>Solids: <b>Fasted for 6 hrs</b></p> <p>Clear Fluids: _____</p> <p>Pregnancy: _____</p> <p>Lactation: _____</p>	<p><b>ALLERGIES</b></p> <p>NKDA</p>																																	

**Relevant Medication:**  
 Nil

<b>Investigations</b>	<input type="checkbox"/> Haematology FBC Hb 14 WCC 16 Plt 203 Sickle: _____	<input type="checkbox"/> Biochemistry U & E K 5.1 Ur 7 Cr 103 Blood Sugar: _____	<input type="checkbox"/> Coag. NAD <input type="checkbox"/> Gp. & Save <input type="checkbox"/> X - Match	<input type="checkbox"/> ECG NAD <input type="checkbox"/> X - Ray	Other: Probable inflammatory mass in RIF
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**CONSENT:**  GA  Sedation  Epidural  Spinal  Regional  Suppository  
 PCA  EPCA  Other

Notes / Discussion / Technique proposed:

Consented for GA with LMA + RHS femoral nerve block

Risks explained and consented

Anaesthetic Information leaflet received by patient

**For attention of ward staff:** (further investigations, fasting, continue/omit current medication, etc.)





## DEBRIEFING

### POINTS FOR FURTHER DISCUSSION:

- Learn how to approach the management of unexpected hypertension under anaesthesia
- Understand the factors that can contribute to drug errors occurring
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### DEBRIEFING RESOURCES

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<http://www.frca.co.uk/documents/hypertensioninanaesthesia.pdf>
2. Paix A, Runciman W, Horan B et al. Crisis management during anaesthesia: hypertension. Qual Saf Health Care. 2005. 14 (3):e12  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1744002/pdf/v014p00e12.pdf>
3. Abeysekera A, Bergman IJ, Kluger MT, Short TG. Drug error in anaesthetic practice: a review of 896 reports from the Australian Incident Monitoring Study database. Anaesthesia 2005. 60 p220-227  
<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2044.2005.04123.x/pdf>
4. Webster CS, Merry AF, Larsson L et al. The frequency of drug administration error during anaesthesia. Anaesthesia and Intensive Care 2001. 25 (5) 494-500  
<http://www.aaic.net.au/Document/?D=2000210>



**INFORMATION FOR PARTICIPANTS**
**KEY POINTS:**

- Learn how to approach the management of unexpected hypertension under anaesthesia
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**PARTICIPANT REFLECTION:**

What have you learnt from this experience? (Please try to list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?

**PARTICIPANT FEEDBACK**

Date of training session:.....

Profession and grade:.....

What role(s) did you play in the scenario? (Please tick)

Primary/Initial Participant	<input type="checkbox"/>
Secondary Participant (e.g. 'Call for Help' responder)	<input type="checkbox"/>
Other health care professional (e.g. nurse/ODP)	<input type="checkbox"/>
Other role (please specify):	<input type="checkbox"/>
Observer	<input type="checkbox"/>

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I found this scenario useful					
I understand more about the scenario subject					
I have more confidence to deal with this scenario					
The material covered was relevant to me					

Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants?  
 (This is especially important if you have ticked anything in the disagree/strongly disagree box)

**FACULTY DEBRIEF – TO BE COMPLETED BY FACULTY TEAM**

What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn't it go well?

How could the scenario be improved for future participants?