

# BLOCKED ANAESTHETIC CIRCUIT

MODULE: PATIENT SAFETY

TARGET: ALL ANAESTHETISTS

## BACKGROUND:

Numerous case reports have described incidents where anaesthetic breathing circuits have become blocked by foreign objects either from the manufacturing stage or at the time of use in the anaesthetic room or operating theatre. Formal, careful and thorough machine checking before each list, and appropriate checks between cases, are critical steps in the safe conduct of anaesthesia, and anaesthetic training must continue to reflect this.

In 2012 the AAGBI updated its safety guideline for checking anaesthetic machines and equipment prior to use. The first step in this updated checklist is checking that a self-inflating bag is available – thus ensuring a method of isolating the patient from the anaesthetic machine while maintaining ventilation at all times.

This scenario has been designed for use during the Oxford Novice Anaesthetist Training Course. However, it is suitable for delivery to anaesthetists at all stages of training and practice.

## RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

IG_BS_02	Demonstrates appropriate checking of equipment prior to induction, including equipment for emergency use
IG_BK_03	In respect of the equipment in the operating environment: <ul style="list-style-type: none"> <li>• Demonstrates understanding of the function of the anaesthetic machine including <ul style="list-style-type: none"> <li>○ Performing proper pre-use checks</li> <li>○ Changing/checking the breathing system</li> </ul> </li> </ul>
IG_BS_06	In respect of monitoring: <ul style="list-style-type: none"> <li>• Manages monitors appropriately e.g. set alarms; start automatic blood pressure</li> <li>• Demonstrates proficiency in the Interpretation of monitors</li> </ul>
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]
CI_BK_02	Unexpected fall in SpO <sub>2</sub> with or without cyanosis
CI_BK_03	Unexpected increase in peak airway pressure
CI_BK_18	Difficulty with IPPV, sudden or progressive loss of minute volume
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_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:

- Rapid method of identifying and differentiating between equipment-related and patient-related causes of ventilatory failure during anaesthesia

### SCENE INFORMATION:

- Location: Anaesthetic Room
- Expected Duration of Scenario: 10-15 mins
- Expected Duration of Debrief: 30-35 mins

### EQUIPMENT & CONSUMABLES

Manikin – Male.  
 Anaesthetic machine – Ensure that a self-inflating bag is present on the back of the machine.  
**Anaesthetic circuit – blocked at junction of catheter mount and angle piece by cellophane**  
 Stocked airway trolley  
 Self-inflating bag  
 Infusion/TIVA pumps  
 (Simulated) Propofol for infusion ready to be drawn up into 50ml syringes  
 Simulated anaesthetic drugs

### PERSONS REQUIRED

Anaesthetic Junior Trainee  
 Anaesthetic Assistant  
 Anaesthetic Senior Trainee

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

Mr Levi Caine is a 60 year old man who is undergoing a right total knee replacement. He has hypertension, mild COPD and arthritis. His regular meds are amlodipine, seretide and salbutamol. There are no known allergies.

He has had a right femoral nerve block awake with 30ml of 0.25% bupivacaine.

Please continue his anaesthetic care by inducing general anaesthesia, inserting an LMA and continuing his peri-operative care.

### ‘VOICE OF MANIKIN’ BRIEFING:

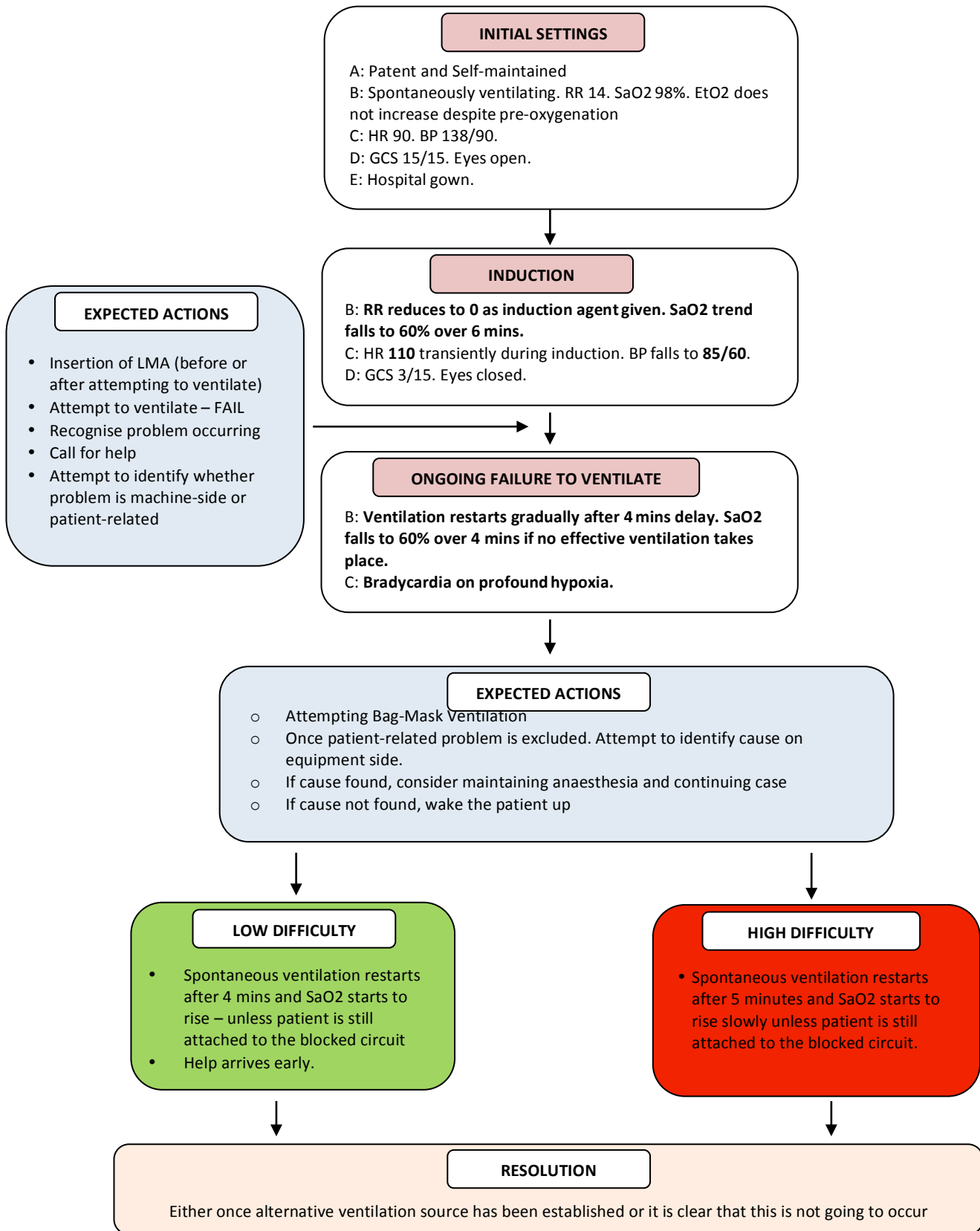
Unresponsive. Under General Anaesthetic.

### ‘IN SCENARIO PERSONNEL’ BRIEFING:

#### ANAESTHETIC ASSISTANT

Support the anaesthetist during the scenario, but do not volunteer solutions.

CONDUCT OF SCENARIO



# ANAESTHETIC RECORD SHEET



**PATIENT DETAILS / ADDRESSOGRAPH**  
 Hospital No. \_\_\_\_\_  
 SURNAME: **Levi Caine**  
 (Block Letters)  
 FORENAMES: **60 years old**  
 Address: \_\_\_\_\_  
 Ward/Hosp: \_\_\_\_\_  
 DOB: \_\_\_\_\_ Sex: M / F

Procedure(s) proposed:  
**RHS Total Knee Replacement**  
 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>Previous Appendicectomy</p> <p><b>Medical history:</b></p> <p>Hypertension                  COPD (mild) – no hospital admission                  Arthritis</p> <p>Good exercise tolerance – swims &gt;200m weekly                  Walking limited by arthritis</p> <p>VTE Risk: <input type="checkbox"/> High <input type="checkbox"/> Low</p> <p><b>NBM since</b> Solids: <b>2200 yesterday</b> Pregnancy: <b>Neg</b>                  Clear Fluids: _____ Lactation: _____</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                  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: 2px 5px;">8</td><td style="padding: 2px 5px;">7</td><td style="padding: 2px 5px;">6</td><td style="padding: 2px 5px;">5</td><td style="padding: 2px 5px;">4</td><td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td> <td style="border-left: 1px solid black; padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">4</td><td style="padding: 2px 5px;">5</td><td style="padding: 2px 5px;">6</td><td style="padding: 2px 5px;">7</td><td style="padding: 2px 5px;">8</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">8</td><td style="padding: 2px 5px;">7</td><td style="padding: 2px 5px;">6</td><td style="padding: 2px 5px;">5</td><td style="padding: 2px 5px;">4</td><td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">1</td> <td style="border-left: 1px solid black; padding: 2px 5px;">1</td><td style="padding: 2px 5px;">2</td><td style="padding: 2px 5px;">3</td><td style="padding: 2px 5px;">4</td><td style="padding: 2px 5px;">5</td><td style="padding: 2px 5px;">6</td><td style="padding: 2px 5px;">7</td><td style="padding: 2px 5px;">8</td> </tr> </table> <p>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>Relevant Medication:</b></p> <p>Amlodipine 10mg OD                  Seretide 1 puff OD                  Salbutamol INH PRN</p>	<p style="text-align: center; font-weight: bold; font-size: 1.2em;">ALLERGIES</p> <p style="text-align: center;">NKDA</p>
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Investigations	<input type="checkbox"/> Haematology FBC Hb 12.8 Plt 311 Sickle: _____	<input type="checkbox"/> Biochemistry U & E NAD 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: _____
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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:

- Rapid method of identifying and differentiating between equipment-related and patient-related causes of ventilatory failure during anaesthesia

### DEBRIEFING RESOURCES

1. Protecting the breathing circuit in anaesthesia. DoH. Report to the Chief Medical Officer of an Expert Group on blocked anaesthetic tubing. May 2004.  
<http://www.frca.co.uk/documents/Protecting%20the%20PBC.pdf>
2. Breathing system obstruction: a continuing issue. Anaesthesia News. AAGBI Newsletter September 2012.  
<http://www.aagbi.org/sites/default/files/September.pdf>
3. AAGBI Safety Guideline. Checking Anaesthetic Equipment 2012.  
[http://www.aagbi.org/sites/default/files/checking\\_anaesthetic\\_equipment\\_2012.pdf](http://www.aagbi.org/sites/default/files/checking_anaesthetic_equipment_2012.pdf) Checklist for Anaesthetic Equipment 2012.  
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## INFORMATION FOR PARTICIPANTS

### KEY POINTS:

- Rapid method of identifying and differentiating between equipment-related and patient-related causes of ventilatory failure during anaesthesia

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<http://www.aagbi.org/sites/default/files/September.pdf>
3. AAGBI Safety Guideline. Checking Anaesthetic Equipment 2012.  
[http://www.aagbi.org/sites/default/files/checking\\_anaesthetic\\_equipment\\_2012.pdf](http://www.aagbi.org/sites/default/files/checking_anaesthetic_equipment_2012.pdf) Checklist for Anaesthetic Equipment 2012.  
[http://www.aagbi.org/sites/default/files/checklist\\_for\\_anaesthetic\\_equipment\\_2012.pdf](http://www.aagbi.org/sites/default/files/checklist_for_anaesthetic_equipment_2012.pdf)

**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?