**SIM MAN SCENARIOS**

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# END OF LIFE

## ACS GAVIN SMITH - UNSTABLE ANGINA

**Patient data:** Name: John Gavin Smith Age 55 Male Height 175cm

Weight 75kg

Initial state of patient is:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus with Anterior AMI, ST elevation | HR  110 | RR  18 | BP  100/60 | SpO2  94 | TPERI  36.4° | All other values are set to  normal/ default |

Student options are to give oxygen or not. The lecturer clicks a button to indicate when student actions are initiated, and this activates changes in SimMan’s vital signs as follows:

**BUTTON 1 - Oxygen is given:**

|  |  |
| --- | --- |
| SpO2  98 | This change occurs over a time period of 20 seconds. |

At the lecturer’s discretion the heart rate can be increased further by clicking a second button. This can be pressed whether oxygen is given or not, and either before or after oxygen is given:

**BUTTON 2 – Heart Rate Increases**

|  |  |
| --- | --- |
| HR  118 | This change occurs over a time period of 20 seconds. |

A variety of appropriate vocal responses from SimMan can also be easily accessed by the lecturer.

## ACS GAVIN SMITH – NSTEMI

**Patient data:** Name: John Gavin Smith Age 55 Male Height 175cm

Weight 75kg

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus with anterior AMI, Late | HR  115 | RR  20 | BP  90/75 | SpO2  91 | etCO2 | TPERI  37.2° | All other values are set to normal/default |

Student options are to give oxygen or not. Lecturer clicks one of two buttons to indicate if this has been done or not, and this activates changes in SimMan’s vital signs as follows:

**Oxygen is given:**

|  |  |  |  |
| --- | --- | --- | --- |
| HR  140 | BP  86/76 | SpO2  99 | These changes occur over a time period of 20 seconds |

**NO Oxygen is given:**

|  |  |  |  |
| --- | --- | --- | --- |
| HR  140 | BP  86/76 | SpO2  90 | These changes occur over a time period of 20 seconds |

A variety of appropriate vocal responses from SimMan can also be easily accessed by the lecturer, e.g. “Don’t put the mask on- it makes me feel sick”.

## ACS GAVIN SMITH – STEMI

**Patient data:** Name: John Gavin Smith Age 55 Male Height 175cm

Weight 75kg

Initial state of patient is:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus with Anterior AMI, Late (Coupled PVC) | HR  155 | RR  22 | BP  80/60 | SpO2  98 | TPERI  37.2° | All other values are set to  normal/default |

Student options are whether to remove oxygen mask from distressed patient or not, and if having done so whether to replace it again or not. Lecturer clicks one of two buttons to indicate whether mask has been removed or replaced and this activates changes in SimMan’s vital signs as follows:

* When mask is taken off the patient vomits (a vocal sound only) and the SpO2 drops from 98 to 90 over a time period of 20 seconds.
* When mask is replaced SpO2 increases from 90 to 98 over a time period of 20 seconds.

A variety of appropriate vocal responses from SimMan can also be easily accessed by the lecturer, for example: “I feel sick with the mask on – take it off!”

## ACS GAVIN SMITH – STEMI Complications

**Patient data:** Name: John Gavin Smith Age 55 Male Height 175cm

Weight 75kg

Initial state of patient is:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  115 | RR  26 | BP  100/60 | SpO2  89 | TPERI°  37.2 | All other values are set to  normal/default |

Student options are whether to lay the patient down and not give oxygen, or whether to keep them upright and give oxygen. The lecturer clicks the relevant button to indicate when student actions are initiated, with the following consequences:

Patient is laid down and not given oxygen:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  120 | RR  30 | BP  100/50 | SpO2  86 | TPERI°  37.2 | All other values are set to  normal/default |

These transitions take place gradually over a period of 30 seconds.

Patient is sat upright and is given oxygen:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  120 | RR  26 | BP  100/50 | SpO2  94 | TPERI°  37.2 | All other values are set to  normal/default |

These transitions take place gradually over a period of 30 seconds.

* A variety of appropriate vocal responses from SimMan can also be easily accessed by the lecturer, for example: “I’m laid flat – sit me up!” etc.

## END OF LIFE COPD NEW

**Patient data:** Name: COPD Male

Initial state of patient is: Vocal sound: Cough/Wheeze

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  128 | RR  38 | BP  85/50 | SpO2  85 | etCO2  34 | BTEMP  37.2° | TPERI°  32.1 |

All other values are set to normal/default.

Student has option to check response of patient or not, with the following consequences:

* If student checks for a response, lecturer clicks a button triggering the vocal response of “I can’t breathe – I can’t get my breath”. Vital signs stay the same.
* If student fails to check for a response, the same verbal response is triggered automatically after 8 minutes. Vital signs stay the same.

## END OF LIFE NEW

**Patient data:** No data given

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM:  Sinus | HR:  40 | RR:  9 | BP:  80/50 | SpO2:  77 | etCO2:  34 | BTEMP  37.2° | TPERI  32.1° |

All other values are normal/default.

The lecturer manipulates the scenario and triggers SimMan’s vocal response and changes to vital signs by selecting one of three buttons (DETERIORATE, DEATH and GROAN)

The GROAN button is clicked when the student checks the patient response.

* Each time the GROAN button is clicked SimMan groans once.
* If DETERIORATE button is clicked Cheyne Stoking commences and HR drops from 40 to 30, RR falls from 9 to 4 and BP from 80/50 to 70/40
* If DEATH button is clicked, SimMan deteriorates over 3 minutes. Vocal sounds stop as HR falls to 0, SpO2 falls to 0 and patient is asystole. Death occurs.

## ODP ANAPHYLAXIS

**Patient data:** No details given

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  70 | RR  14 | BP  110/70 | SpO2  88 | etCO2  34 | BTEMP  37.2° | TPERI  32.1° |

All other values are normal/default.

This scenario is written for use with three separate students.

The lecturer initiates the scenario for the first student by clicking a DETERIORATE button which triggers an increase in HR from 70 to 140, RR from 14 to 24 and a fall in BP from 110/70 to 90/50. These changes take place over a time period of 3 minutes. The student decides upon a response.

The lecturer then has the option to make the patient deteriorate further. If this option is taken, the HR drops from 140 to 130, RR drops from 24 to 18, BP increases from 90/50 to 115/80.

The next student starts, and the lecturer can press a button to indicate this. At this point tongue oedema is turned on at maximum level and tongue fallback is triggered. The state of the patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  155 | RR  33 | BP  80/02 | SpO2  80 | etCO2  34 | BTEMP  37.2° | TPERI  32.1° |

The lecturer clicks a further button to initiate PEA. Heart Rhythm changes from Sinus to PEA, HR increases to 160, RR and SpO2 both drop to zero. The patient’s eyes close.

The lecturer has the option to press the button ‘Pulse then VF’, which initiates a change to sinus rhythm and a heart rate of 155 which changes to ventricular fibrillation after 30 seconds and the HR drops zero.

Once the student has defibrillated the patient the lecturer can select either "Shock Patient" or "Use Defibrillator" which triggers the patient to move into the final state. This causes the rhythm to change again to sinus, the HR drops to 140 with a BP of 100/50 and Sp02 of 85.

After 30 seconds Sp02 increases to 89 and tongue oedema is reduced to half size. A further 30 seconds and Sp02 returns to 95 and tongue oedema is reduced completely.

# SMART 2015

## SMART – ALAN ROSE (HEART ATTACK)

**Patient data:** Name: SMART 4 Gender: Male No other details supplied.

This scenario is designed as a demo, in which lecturers play the part of clinicians and technical assistance is required to trigger appropriate responses and active appropriate verbal responses.

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  AF | HR  136 | RR  26 | BP  100/80 | SpO2  90 | etCO2  34 | BTEMP  37.0° | TPERI  32.1° |

Shock threshold is set at 150. All other values are set to default/normal.

The ‘clinicians’ must decide what to do - whether to give oxygen or not and then whether to give saline or not. The technician clicks on the relevant button when the actions have been completed or after a discretionary time period when the actions have NOT been completed.

The consequences of the actions/ non actions and the sequence in which they are administered (or not) is as follows:

* If they decide to give oxygen SpO2 increases to 96 over a period of one minute. Other values remain the same.
* If button is clicked to indicate NO oxygen has been given HR increases from 136 to 146, RR increases from 26 to 36 and SpO2 drops from 90 to 85.
* If oxygen is still not given but they decide to give saline the SpO2 returns to 96 over a period of 30 seconds and HR drops to 125 but RR remains elevated at 36.
* If the clinician *has* previously given oxygen and then also gives saline, HR decreases gradually over a period of one minute from 136 to 115.

This has resulted in three possible situations.

1. In the first case, where correct treatment has been given, HR=115 and Sp02= 96, while other values have remained the same.
2. In the second case, where no oxygen was given but saline was, HR=125 and RR= 36, with other values as in the initial state.
3. In the third case, where neither oxygen nor saline have been given, HR=146, RR=36 and SpO2 =85

At this point, the clinicians may decide to give more saline, causing the pulse to increase from 87 to 90, while other values remain the same.

The next choice is whether to administer analgesia (morphine). If it is given, HR decreases to 96 and RR decreases, while other values remain the same. If it is NOT given, HR =130 and RR =32.

A wide range of appropriate verbal responses are available to encourage interaction with the manikin, e.g. “It feels as if there is a tight band around my chest!” and “I can’t get my breath!”

## SMART – ANTANAS CANTAT (ACUTE KIDNEY INJURY)

**Patient data:** Name: Antanas Cantat Age 84 Female Height 162cm

Weight 62kg

Learning Objective

Technical Skills

* Undertake an initial primary (A to E) on the patient
* Upon reassessment, quickly recognise signs of Acute Kidney Injury
* Escalate care to medical team quickly

Human Factors

* Effective communication within the team and to medical team using SBAR
* Delegation of tasks and clearly defined roles
* Early identification of team leader role & followership

Initial state of patient is:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  112 | RR  22 | BP  101/57 | SpO2  92 | TPERI  38.2° | All other values are set to normal/default |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  118 | RR  24 | BP  87/55 | SpO2  96 or 90 | TPERI  38.2° | All other values are set to normal/default |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  T waves inline with Hyperkalaemia | HR  125 | RR  24 | BP  87/55 | SpO2  94 or 86 | TPERI  38° | All other values are set to normal/default |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  T waves inline with Hyperkalaemia | HR  122 or 130 | RR  24 | BP  83/57 or 78/49 | SpO2  94 or 86 | TPERI  37.6° | All other values are set to normal/default |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  T waves inline with Hyperkalaemia | HR  121 or 152 | RR  25 | BP  87/58 or 69/38 | SpO2  95 or 82 | TPERI  37° | All other values are set to normal/default |

## SMART – JACK PALMER (SEPSIS)

**Patient data:** Name: Jack Palmer Gender: Male

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  135 | RR  40 | BP  90/40 | SpO2  84 | etCO2  34 | BTEMP  37.2° | TPERI  32.1° |

Right lung sounds are set to crackles. All other values are normal/default.

The lecturer clicks a button to indicate when oxygen has been given, which causes the RR to drop from 40 to 34 and SpO2 to increase to 88. Other values remain the same.

If oxygen is NOT given the lecturer can indicate this when they feel it is appropriate, causing the SpO2 to drop from 84 to 82.

When Saline is given a slight change in BP is triggered, from 90/40 to 95/40. If fluids are given a second time, the BP changes to 100/50 and if given a third and fourth time the changes are to BP 103/55 and BP 110/65 respectively.

If no Saline is given the lecturer can indicate this several times, initially causing an increase in HR from 135 to 140 and a drop in BP to 85/40 and then BP 82/40 then finally BP 78/35 with each successive click.

A wide range of appropriate verbal responses are available to encourage interaction with the manikin.

## SMART – JOYCE THORNE (BLEEDING)

**Patient data:** No data supplied.

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  107 | RR  24 | BP  110/65 | SpO2  90 | etCO2  34 | BTEMP  37.2° | TPERI  32.1° |

All other values are normal/default.

Student options are to give oxygen or not. Lecturer clicks one of two buttons to indicate if this has been done or if has not been done within two minutes, and this activates changes in Joyce’s vital signs as follows:

* Oxygen is given: Over a time period of 30 seconds HR increases from 107 to 125, SpO2 increases from 90 to 98 and blood Temp drops from 37.2 down to 36. Other values remain the same.
* If NO Oxygen is given RR increases from 24 to 28 and SpO2 drops from 90 to 86. Other values remain the same. If this change prompts the students to then give the oxygen, values will change as above where oxygen was given.

The student may then decide whether to give fluid. These decisions trigger changes in Joyce/SimMan when the lecturer clicks the appropriate button. In both cases rhythm remains as sinus, whilst other values change as follows:

If saline is given:

* After the first 500ml HR increases from 125 to 128 and BP changes from 110/65 to 105/ 67.
* After the second fluids HR increases further to 130 and BP changes to 110/65. This state persists for one minute and then HR continues to increase to 140, while BP changes to 85/38.
* If the first bag of fluid is given, but not the second, then after one minute HR increases to 135 and BP drops to 90/40.

If no saline is given:

* After 2 minutes HR increases from 125 to 130 and BP changes from 110/65 to 100/60.
* After a further 1minute HR increases to 135 and BP drops to 90/40.
* After a further 2 minutes HR increases to 150 and BP drops to 60/40.

If fluids are delayed:

* If the deterioration in vital signs prompts the student to eventually give delayed fluids, following their administration HR drops to 130 and BP increases to 100/65.

Following the administration of fluids, the students may then decide to give Joyce blood, with the following consequences: BP changes drops to 90/40. A wide range of appropriate verbal responses are available to encourage student interaction with the manikin.

## SMART – LAURA (HYPO APPENDICITIS)

**Patient data:** No data supplied.

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  122 | RR  28 | BP  100/52 | SpO2  82 | etCO2  34 | BTEMP  37.2° | TPERI  32.1° |

All other values are normal/default. At the start of the scenario Laura (i.e. SimMan) is snoring loudly and the student is required to hold the head in a head-tilt chin-lift. If they release Laura starts to snore again.

The lecturer clicks on a selection of buttons to indicate when a student action has been performed or omitted.

* If the student gives oxygen SpO2 increases from 82 to 98 over the course of 1 minute, and if this is immediately followed by Saline, HR reduces from 122 to 120.
* If oxygen is given and then there is a delay in giving Saline, HR increases from 122 to 125 instantly and then gradually to 135, while BP drops from 100/52 to 95/50.
* If a second bag of fluids is given HR gradually decreases from 120 to 100.
* If glucose is then given, the patient makes a gargling sound.
* If this is followed by intubation the gargling sound stops. When intubation is removed RR is reduced from 28 to 15 and the patient asks twice “Where am I”?

If this procedure is followed, within 20 seconds HR is 86 and BP 105/60.

## SMART – PAUL FOSTER (DIABETIC)

**Patient data:** No data supplied.

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  115 | RR  22 | BP  145/90 | SpO2  97 | etCO2  34 | BTEMP  37.2° | TPERI  32.1° |

Pupil size is set to small. All other values are normal/default.

By clicking the relevant button, the lecturer initiates and then stops Trismus with tonic/clonic convulsions in SimMan. When the Trismus/convulsions stop the following changes can be observed: HR has increased from 115 to 125, RR has increased from 22 to 28 and SpO2 has dropped from 97 to 80. (All other values remain the same).

The students may decide to give oxygen, in which case the SpO2 gradually increases from 80 to 98.

Whether oxygen is given or not, the lecturer can trigger the patient to eventually make a full recovery with the vital signs reading as follows: HR: 86, RR16, Sp02: 100, BP130/85.

## SMART – STEVE (ASTHMA)

**Patient data:** No data supplied.

Initial state of patient is:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  110 | RR  36 | BP  90/40 | SpO2  88 | etCO2  34 | BTEMP  37.0° | TPERI  32.1° |

Right and left lung sounds are set to ‘Wheezing’. All other values are normal/default.

The students must decide whether to give oxygen or not. The lecturer then triggers the following changes by clicking the relevant button:

* Oxygen given within first two minutes: Spo2 increases from 88 to 90.
* No Oxygen given within first 2.00 minutes: RR drops from 36 to 34 and SpO2 from 88 to 86. The students may react to these changes and be prompted to eventually give oxygen:
* Oxygen given after first 2 minutes: RR increases again from 34 to 36, SpO2 climbs from 86 to 90.

The students may then decide to give fluid. This triggers the following changes:

* First fluids given: BP changes from 90/40 to 100/60.
* Second fluids given: BP changes to 105/65.
* Third fluids given: BP changes to 110/ 55.
* Fourth fluids given: BP changes to 110/65

All other values remain the same.

## RAMPPS Ligature

**Patient data:** Name: Edward James Gender: Male Age: 42 Years Old

Initial state of patient is:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  142 | RR  0 | BP  200/98 | SpO2  85 | TPERI  35.8° |

The manikin should be setup with a ligature around the neck. The manikin will have its eyes closed and will not be breathing. The Lecturer will have 3 options to choose from. "Ligature Removed", "Correct Treatment" and "Untreated".

Pressing "Ligature Removed" will cause the manikin to start spontaneously breathing with a RR of 44 and loud Stridor on both lungs.

Pressing "Untreated" at any point will initiate the following changes to the existing observation gradually over a 2 minute period: HR -100, BP -100 and SpO2 -10. If the patient is untreated for a further minute, then they will arrest and have an Asystole rhythm.

Pressing "Correct Treatment" at any point will cancel any active trends and cause the patients observation to improve gradually over 2 minutes. The manikin's eyes will open, and Stridor will become quieter. The final observations will be as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| RHYTHM  Sinus | HR  112 | RR  25 | BP  158/89 | SpO2  90 | TPERI  35.8° |