

# CARDIAC SIMULATION 5

## Simulation focus - management of SVT (Defibrillation – skill)

### Expected outcomes

**Team Leader** - Perform initial ABCDE assessment, direct team and lead care – taking over skills as and when appropriate. Identify the infant is in SVT and initiate treatment. Identify increasing clinical shock and need for cardioversion. Identify need for and summon help.

**Team/More experienced candidate** - Manage cardioversion of shocked SVT.

### Assessment

This simulation allows for discussion of cardioversion, practise, and reassessment of defibrillation skills.

### History

#### Emergency staff

Pre-alert from the paramedics:  
Josie is a 1-month-old girl who is being brought in with rapid breathing, mottled skin and poor feeding.

#### Ward staff

Josie is a 1-month-old girl who was admitted for observations following an episode of being unresponsive. Her mother has called you over as she is breathing quickly, and the monitor is alarming.

### Immediately apparent

Please ensure the prompt card with global overview is placed on the manikin for the start of the sim.

*The infant looks tachypnoeic and distressed.*

### Clinical course (to be given as the simulation progresses)

Assess	Features	Action	Key treatment points
A	Patent	Assess airway	<b>Call for help/arrest or medical emergency team</b>
B	Tachypnoeic <b>RR 60</b> <b>SpO<sub>2</sub> 95%</b>	Assess breathing	<b>High flow oxygen via non-rebreathe mask</b>
C	Looks pale <b>HR 240, CRT 2,</b> <b>BP 60/35</b> <b>Narrow complex tachycardia</b>	Requests 12 lead ECG IV access, gas and bloods SVT protocol - Consider vagal manoeuvres adenosine	<b>Recognise SVT</b> Vagal manoeuvres <b>IV access and adenosine – no response</b>
D	<b>A</b> on the AVPU, crying. <b>Blood glucose 4.2 76mg/dl</b> Pupils 4 and reactive	Blood glucose 4.2	
E	<b>Temp 36.3</b>		

## Reassessment

No improvement with vagal manoeuvre or adenosine and becomes 'shocked' after **first** dose of adenosine. Requires DC cardioversion or clinical shock will worsen.

Assess	Features	Action	Key treatment points
A	Patent	Assess	
B	Increasingly tachypnoeic. <b>RR 70. SpO<sub>2</sub> 95%</b>	Assess including auscultation and SpO <sub>2</sub>	<b>High flow oxygen via NRBM</b>
C	<b>HR still 240-250</b> <b>Narrow complex</b> Pulse weak <b>CRT 4, BP 45/30</b> Normal sinus rhythm only reverts after second cardioversion	Assess ECG Ensure IV access Synchronous shock 1 J/kg Synchronous shock 2 J/kg Fluid bolus	<b>Recognises 'shock' and need for cardioversion</b> Anaesthetic / PICU support Discussion about sedation /intubation
D	<b>V</b> on AVPU <b>Blood glucose 4.2 76mg/dl</b> Pupils size 3 and reactive	Assess Blood glucose is 4.2 <b>76mg/dl</b>	
E	<b>Temp 36.2</b>		

Defib and anaesthetist competent to sedate or give a GA and intubate, to arrive **after** first dose of adenosine once requested as they were "just passing by". They will have drugs and equipment immediately available to them.

## Reassessment post sedation/GA

Assess	Features	Action	Key treatment points
A	Patent with either ETT or airway manoeuvres	Assesses and recognises need for support if sedation or GA given	<b>Airway support/I&amp;V</b>
B	Increasingly tachypnoeic. <b>RR 50-60</b> if sedation or as per ventilation if I&V, <b>SpO<sub>2</sub> 100%</b> , poor trace. Bilateral air entry	Assess, ensures ventilating either spontaneously or supported	<b>Ventilation if intubated</b>
C	<b>HR still 240-250</b> <b>Narrow complex</b> Pulse weak <b>CRT 4, BP 45/30</b> Normal sinus rhythm only reverts after second cardioversion	Assess ECG Ensure IV access Synchronous shock 1 J/kg Synchronous shock 2 J/kg Fluid bolus	<b>Recognises 'shock'</b> <b>Safe cardioversion</b> Synchronous shock 1 J/kg Synchronous shock 2 J/kg (second shock successful)

Post DC cardioversion re-assessment will vary depending on whether the child has been sedated or intubated however the **child will be in SR, rate 160, CRT 1-2** with a good pulse character and appearing less pale.

<b>NB</b>	<ul style="list-style-type: none"> <li>• <b>Discussion about general anaesthetic vs sedation in this case</b></li> <li>• <b>Discussion about synchronous vs asynchronous shocks</b></li> </ul>
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## Debrief

Using the learning conversation, discuss the technical and non-technical elements of the simulation.

## Assessment

This station makes up part of the continuous assessment process. Candidates must be informed whether they have met the standard, or whether they are not quite meeting the standard in this area. If the latter is the case, the candidate must be given clear instructions on how they can develop to reach the standards required. This should preferably be done prior to the candidates leaving the room.

At the end give the opportunity for candidates to ask questions, answer these and then summarise the key points.

## Props to print and laminate

**Cardiaal 5 Globaal overzicht (plaatsen op oefenpop).**

**Het kind vertoont tachypnoe en is angstig en benauwd.**

## Cardiaal 5 Resultaten:

### Veneus bloedgas bij plaatsen initiële lijn.

<b>PATIENT REPORT</b>	<b>Sample type: Venous</b>	
Blood gas values	Patient	Ref ranges
pH	7.31	[ 7.33 – 7.44 ]
pCO <sub>2</sub>	3.4 <b>kPa 26mmHg</b>	[ 5.0 – 6.4 ]
pO <sub>2</sub>	8.2 <b>kPa 62mmHg</b>	[ 5.3 ]
HCO <sub>3</sub>	12.9	[ 22 – 28 ]
BE	-9.3	[ -2 – +2 ]
Lactate	4.1	[ < 2.0 ]
Glucose	4.2 <b>76mg/dl</b>	[ 3.9 – 5.8 ]
Na	139	[ 133 – 145 ]
K	3.9	[ 3.5 – 5.5 ]
Ca (ionised)	1.12	[ 1.1 – 1.3 ]

## Faculty helper information – Cardiac 5

When candidate requests information regarding observations please give the following in “real-time” (e.g., wait for blood pressure to cycle, saturation trace to be achieved). If key treatment points are not undertaken, consider a “prompt” that would be visible in a child.

Assess	Observation	Example prompt
A	Patent	“Do you need any help?”
B	Tachypnoeic <b>RR 60, SpO<sub>2</sub> 95%</b>	“Do you want her to have oxygen?”
C	Looks pale <b>HR 240, CRT 2,</b> <b>BP 60/35</b> <b>Narrow complex tachycardia</b>	If ECG not recognised, “it looks very narrow and fast” “do you need the algorithm” If no adenosine “are there any drugs we can give?” If no IV access asked for prior “we don’t have IV access, would you like me to put in a cannula?” “are there any bloods you want?”
D	<b>A</b> on the AVPU, crying. <b>Blood glucose 4.2 76mg/dl</b> Pupils 4 and reactive	
E	<b>Temp 36.3</b>	

## Reassessment

Assess	Observation	Example prompt
A	Patent	
B	Increasingly tachypnoeic. <b>RR 70. SpO<sub>2</sub> 95%</b>	Prompt for oxygen if not already on “Do you want her to have oxygen?”
C	<b>HR still 240-250</b> <b>Narrow complex</b> Pulse weak <b>CRT 4, BP 45/30</b> Normal sinus rhythm only reverts after second cardioversion	If shock not recognised, “these are her obs...” If DCCV not considered, ask “is there anything else we can try?” “what’s on the algorithm” If sedation/GA not thought of “will it be painful for her to cardiovert” “is there anyone else we need?”
D	<b>V</b> on AVPU <b>Blood glucose 4.2 76mg/dl</b> Pupils size 3 and reactive	If deterioration not recognised, prompt with “She’s not as awake as she was.”
E	<b>Temp 36.2</b>	

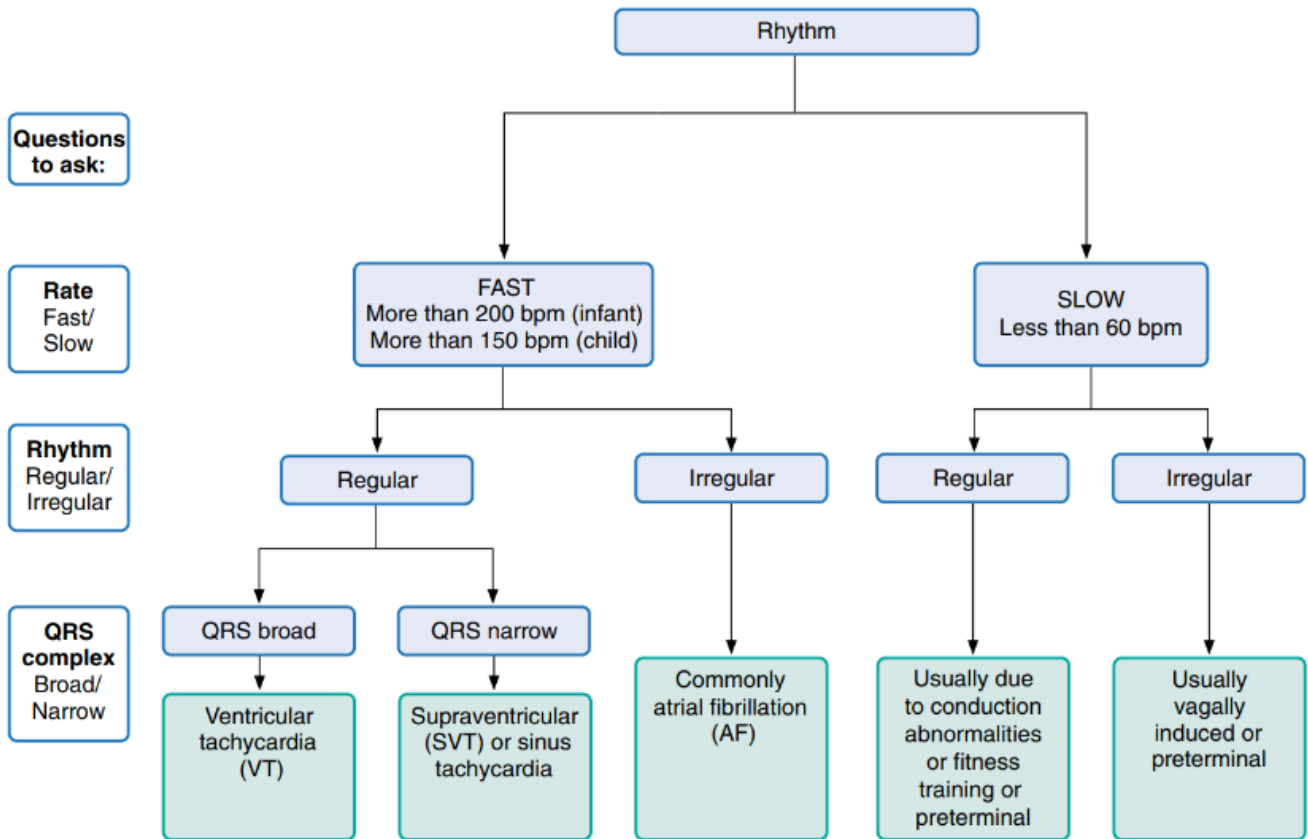
## Reassessment Post sedation/GA

Assess	Observation	Example prompt
A	Patent with either ETT or airway manoeuvres	“She’s snoring a bit” if sedated without airway support
B	Increasingly tachypnoeic. <b>RR 50-60</b> if sedation or as per ventilation if I&V, <b>SpO<sub>2</sub> 100%</b> , poor trace. Bilateral air entry	
C	<b>HR still 240-250</b> <b>Narrow complex</b> Pulse weak <b>CRT 4, BP 45/30</b> Normal sinus rhythm only reverts after second cardioversion	If sedation/GA not thought of “will it be painful for her to cardiovert” If asked to perform DCCV “I’ve not done that before”

## Algorithms:

### Supraventricular tachycardia

#### Basic recognition of arrhythmia



## Management of supraventricular tachycardia

