SIMulatED

Royal Darwin Hospital Emergency Department

Author: Mark de Souza

# Scenario Run Sheet: Hanging

## Scenario Overview

**Estimated Scenario Run Time:**  15-20 mins

**Estimated Guided Reflection Time:** 30 mins

**Target Group:** ED Registrars and Nurses

**Brief Summary:** 22yo indigenous man BIBA with attempted hanging after situational crisis. Coma requires RSI with cervical precautions, supportive care, appropriate imaging and ICU referral.

## Learning Objectives

**General**

Trauma teamwork

**Scenario Specific**

Team approach using Trauma Call

Risk stratification of airway, spinal and CNS insult using history and primary survey findings

Application of intubation checklist; perform RSI using MILS

Management of neurogenic shock after high cord injury

Rationale for imaging after high risk hanging

## Equipment Checklist

**Equipment**

CMAC, Stiffneck Cx collar, Aspen collar

**Medications and Fluids**

Giving set, 0.9% saline, infusion pumps, noradrenaline, RSI meds

**Documents and Forms**

Trauma admission, ED nursing chart, intubation checklist

**Diagnostics Available**

CXR – intubated, APO

VBG – mixed acidosis

CTB and cervical spine

## Scenario Preparation/Later Parameters

**Initial Later**

GCS **5**  RR 4, assisted BVM P 70 BP 90/50 GCS **3T** RR vent HR 100

Sats 93% T 37.2 BSL gas Pupils mid+ SaO2 90% BP 100/60 T 36.2

**Mannequin Features**

Adult male, ligature mark on neck, Tardieu spots on face, intermittent decorticate posturing

## Participants

**Staff Actors**

ED Registrars x3 Radiographer

Nurses x3ED, ED /ICU Consultants available by phone

+/- ICU, SACU registrar

**Instructor Roles**

- Provide the team with clinical signs, VBG, CXR

## Candidate Instructions/Triage Information

The nurse TL informs you that there will be a trauma call in 5 minutes: male in his 20’s coming from Bagot Community. Found suspended from a tree branch with seizure activity, uncertain if toes touching the ground if asked. Cut down by family, unresponsive. Found by SJA with GCS 9, agonal RR 6, HR 80, BP 100/70, RR SaO2 90% by LMA inserted and assisted BVM with 100% O2, best sats 92%

## Patient Instructions

**Medical History (from SJA)**: PH drug induced psychosis 18yo, no current meds.. Family driving in behind. Last seen 30 minutes before being found hanging.

**Social:** Unemployed, living with extended family in Bagot. Cousin-brother died in car accident 1 week ago

## Proposed Scenario Progression

* Requests FACEM/ICU attendance early (20 minute ETA for FACEM).
* Handover from SJA, initiation of primary survey, give clinical signs about neck, chest and face
* Team identifies need for early intubation (coma, APO) + commences intubation checklist: RSI with MILS
* Intubation successful, post tube CXR shows mild oedema
* Judicious use of fluids given APO
* Maintains spinal precautions
* Subsequent hypoxia managed with Fi2 1.0, increased PEEP and low TV
* Sends appropriate lab tests (paracetamol, BAL levels)
* Inserts OGT, IDC, arterial line and CVC
* Arranges CT for appropriate imaging (CTB, CT Cx spine+ soft tissues with angio), transfer to ICU

## Debriefing/Guided Reflection Overview

**General Opening Questions**

* How was the scenario? Has anyone managed a situation like this before?

**Scenario Specific Questions**

* What preparations did you make after notification? What were you concerned about given the mechanism?

**General Wrap-Up Questions**

* What did you find most beneficial about this scenario?
* What was the most challenging point in this scenario?
* What would you do differently next time?

**Judicial (complete) hanging**: body drops distance at least as great as height of body; if knot under mandible: hyperextension of Cx spine, classic Hangman # (C2 ped/pars interarticularis # and C2-3 distraction); distraction/compression of cord, +/- ipsilateral Horner’s (knot on one side) neurogenic APO: poor prog.

**Suicidal hanging**: Usually incomplete (part of body touching ground) cervical # rare (small studies ? 5% in non-drop hangings), but occurs.

> Death by venous obstruction, stagnant cerebral hypoxia, LOC in 15 secs, loss of muscle tone and carotid compression. Airway obstruction by ligature not likely primary cause. Cerebral neuronal death within 5 mins. Duration of hanging<5min: likely full recovery

Other: **autoerotic, postural, traumatic asphyxia**

**Complications of hanging:**

Neurologic:

Cerebral hypoxia

SCI

Horners syndrome

Respiratory:

ARDS (aspiration, POPE, negative pressure PO – poor prog, CNS ischaemia causing SNS discharge): use high PEEP and low TV; ARDSNET

URT barotrauma

Laryngeal injury

Cardiovascular:

Cardiac arrest

Takosubo CM

Neurogenic shock

Carotid/vertebral dissection

Deep MSK structures:

# thyroid and hyoid bones

Digestive tract injury

Predictors of poor outcome:

NOT initial GCS.

Duration of hanging

CT showing anoxic brain injury (poor GWMD)

Cardiopulmonary arrest

Cx spine #

Hypotension on arrival

PaO2/FiO2 ratio on arrival < 1.0

Australian suicide facts: <http://www.mindframe-media.info/for-media/reporting-suicide/facts-and-stats>

Hanging was the commonest cause of death in 2015 in Australia for both men (60% all suicides, then drugs 10%, firearms 7%, poisoning other 7%) and women (50%, then poisoning and drugs 26%)

Age-stand. Suicide death rate highest in NT (19/100,000 deaths) and Tas (14); ACT lowest 9/100,000)

2015 deaths By age: 15-24yo approx. 30-40% deaths by suicide.

Risk factors for suicide: Previous attempt, Mental illness, AOD abuse, Males 3x>Females, ATSI 2x risk (25/100,000 cf 12.5)