

Title	Tricyclic Antidepressant (TCA) Overdose	Version	2.7
Target Audience	FY doctors & student nurses	Run time	10 -15 mins
Authors	James Foxlee, Simon Clark, Monica Minardi, Claire Linkins, Claire Jackson, Udesch Naidoo, Paul Wilder, Mark Loughrey (Concept inspired by RCEM)	Last review	25/7/18
Faculty comments	Extra faculty can play the role of patient relative	Necessity	DESIRABLE

Brief Summary

A young patient has taken a tricyclic antidepressant (TCA) overdose a few hours prior to admission but doesn't immediately admit to it. The patient is initially slightly drowsy and disorientated and then becomes unresponsive with decreased respiratory rate and hypotension. The patient will need immediate supportive management followed by ITU care.

Educational Rationale

FY doctors often face fast moving situations in which they must be able to assess, communicate and know when to change from assessment to resuscitation as the patient deteriorates.

Learning Objectives: Nurse

- A-E assessment of an acutely deteriorating patient
- Appropriate escalation of an unstable patient
- SBAR handover

Learning Objectives: Doctor

- A-E assessment of an acutely deteriorating patient
- Awareness of differential diagnosis for altered consciousness
- Medical management of reduced consciousness and tricyclic antidepressant overdose
- Communication with patient and SBAR handover with colleagues

No	CURRICULUM MAPPING	This scenario
1	Acts professionally	✓
2	Delivers patient-centred care and maintains trust	✓
3	Behaves in accordance with ethical and legal requirements	✓
4	Keeps practice up to date through learning and teaching	✓
5	Demonstrates engagement in career planning	
6	Communicates clearly in a variety of settings	✓
7	Works effectively as a team member	✓
8	Demonstrates leadership skills	✓
9	Recognises, assesses and initiates management of the acutely ill patient	✓
10	Recognises, assesses and manages patients with long term conditions	
11	Obtains history, performs clinical examination, formulates differential diagnosis and management plan	✓
12	Request relevant investigations and acts upon results	✓
13	Prescribes safely	✓
14	Performs procedures safely	✓
15	Is trained and manages cardiac and respiratory arrest	(✓)
16	Demonstrates understanding of the principles of health promotion and illness prevention	✓
17	Manages palliative and end of life care	
18	Recognises and works within limits of personal competence	✓
19	Makes patient safety a priority in clinical practice	✓
20	Contributes to quality improvement	

Candidate Briefing: Nurse

Setting A&E Majors

You are in triage in A&E Majors. A young female patient has just arrived after calling herself an ambulance.

The paramedics found her withdrawn, upset and tearful; she initially refused to talk to them.

She was initially tachycardic with the crew but observations were otherwise unremarkable.

Whilst the paramedics were with her she started becoming confused and was brought in.

Please do basic observations and enter these on the cas card, then escalate as appropriate.

Candidate Briefing: Doctor

Setting A&E Majors

You are on call for medicine. Please wait as directed, until you receive a call from A&E Majors and then act as you would do in real life.

Technical set-up

Setting	A&E Majors		
Simulator	High fidelity manikin		
Gender	Female	Age	22

Initial monitor parameters

RR	O2 sats	Pulse (HR)	BP	ECG rhythm
11	97% on air	130	98/50	Broad complex tachycardia
Cap Refill Time	Blood glucose	Temp.		
3s	4.2	37.0		

Initial patient set-up

Airway	Obstruction	Airway adjunct
	No	No

Breathing	Chest sounds	O2 supply
	Clear	Air

Circulation	Heart sounds	Cannula	BP cuff	Peripheries
	Normal	No	No	Warm, dry

Disability	Eyelids	Pupils	AVPU/GCS
	Open	Dilated	A / 15

Exposure	Posture	Moulage	Bowel sounds
	Supine	None	Sluggish

Specific equipment / prop requirements

- Monitoring: ECG, non-invasive BP (cuff), pulse oximeter - all unattached
- Crash trolley available outside
- Wig
- Patient name band
- A&E admission proforma (not completed, not seen by A&E)
- Blank CAS form and drug chart
- ABG (on request)
- ECG (on request)
- Chest x-ray (on request)
- Printout of Toxbase guideline for TCA overdose (on request)
- TCA Overdose guidance handouts for debrief

DRUGS

- iv fluids (gelofusine, NaCl, Hartmann's, Plasmalyte)
- Sodium Bicarbonate (8.4%) 50ml x3 Minijets

Facilitator Briefing

SCENARIO FLOW

After evaluation by candidate doctor if patient has not been questioned sufficiently to admit to OD before decreasing consciousness:

- a call comes through stating that the distressed mother has rung the hospital to say that she is on route but her amitriptyline tablets are missing and she believes her daughter has taken nearly her whole packet

OR

- mother enters room (see Relative Briefing)

TELEPHONE ADVICE - MED REG / ITU REG

The ITU / Medical Registrar should press the candidate hard about what assessment has been performed, what they think the problem is and what management has been commenced

TELEPHONE ADVICE - TOXICOLOGY CENTRE / PHARMACIST

If candidates contact a toxicology centre and provide the correct diagnosis then inform them that the patient may receive decontamination with activated charcoal if < 2 hours, intravenous fluid, sodium bicarbonate, vasopressors, may require intubation

Telephone advice

- You will be sitting in the control room for the duration
- Answer all calls as “switchboard” in the first instance to allow for realistic delay.

How to run with candidates from only one discipline

An additional member of faculty can play the role of the nurse in this scenario if needed.

Sim Nurse briefing:

You are a nurse working in A&E Majors. A young patient has just arrived via ambulance. The paramedics found her withdrawn, upset and tearful; she initially refused to talk to them.

She was initially tachycardic with the crew but observations were otherwise unremarkable. Whilst the paramedics were with her she started becoming confused and was brought in.

The patient has been complaining of blurred vision. She is becoming disoriented and you are increasingly concerned about her. You have called for urgent review.

Patient's relative briefing

You are the patient's mother

- Enter scenario at an appropriate time
- Penny is a 22 year old university student who lives at home and has no known allergies nor takes any regular medication
- Penny broke up with her long term boyfriend earlier today
- Penny came home from university upset and tearful, wouldn't talk about it. She then went out
- You received a call later from the hospital

- You are willing to move away from the bedside but not out of the room
- If you are not kept informed of what is happening then become distressed
- Your husband died a few months ago in a car crash
- You have been suffering depression and earlier this week were prescribed antidepressants (amitriptyline)

The objective is for the candidate to communicate with you and quickly deduce that the patient has taken a TCA overdose

Patient Briefing

Setting A&E Majors

Name Penny Tapp

Age 22

Gender Female

What has happened to you?

You took an overdose of your mother's pills 2-3 hours ago and later called an ambulance, but were too embarrassed to admit what you had done to the paramedics.

How you should role-play

- Complain of blurred vision and keep asking for water (**dry mouth**)
- Act **disorientated** - this deteriorates fairly rapidly over course of scenario
- Act **upset** and talk about breaking up with your boyfriend earlier today
- Upset about father dying and mother not understanding her

- FY1 candidates: The objective is (before suffering decreased consciousness) for the candidate to question you and quickly learn that you're upset > you've taken something > it's your mother's pills > they were for depression > it's amitriptyline. If they fail badly in this (e.g. you lose consciousness first) then there will be a phone call from the mother to explain
- FY2 candidates: If there is a facilitator playing the mother then the communication of the OD will be shared between you with the mother
- Nurse candidates: If there is one then the doctor won't be called until they request one - follow above instructions but don't get as far as confirming to the nurse that you've taken an overdose

Your background

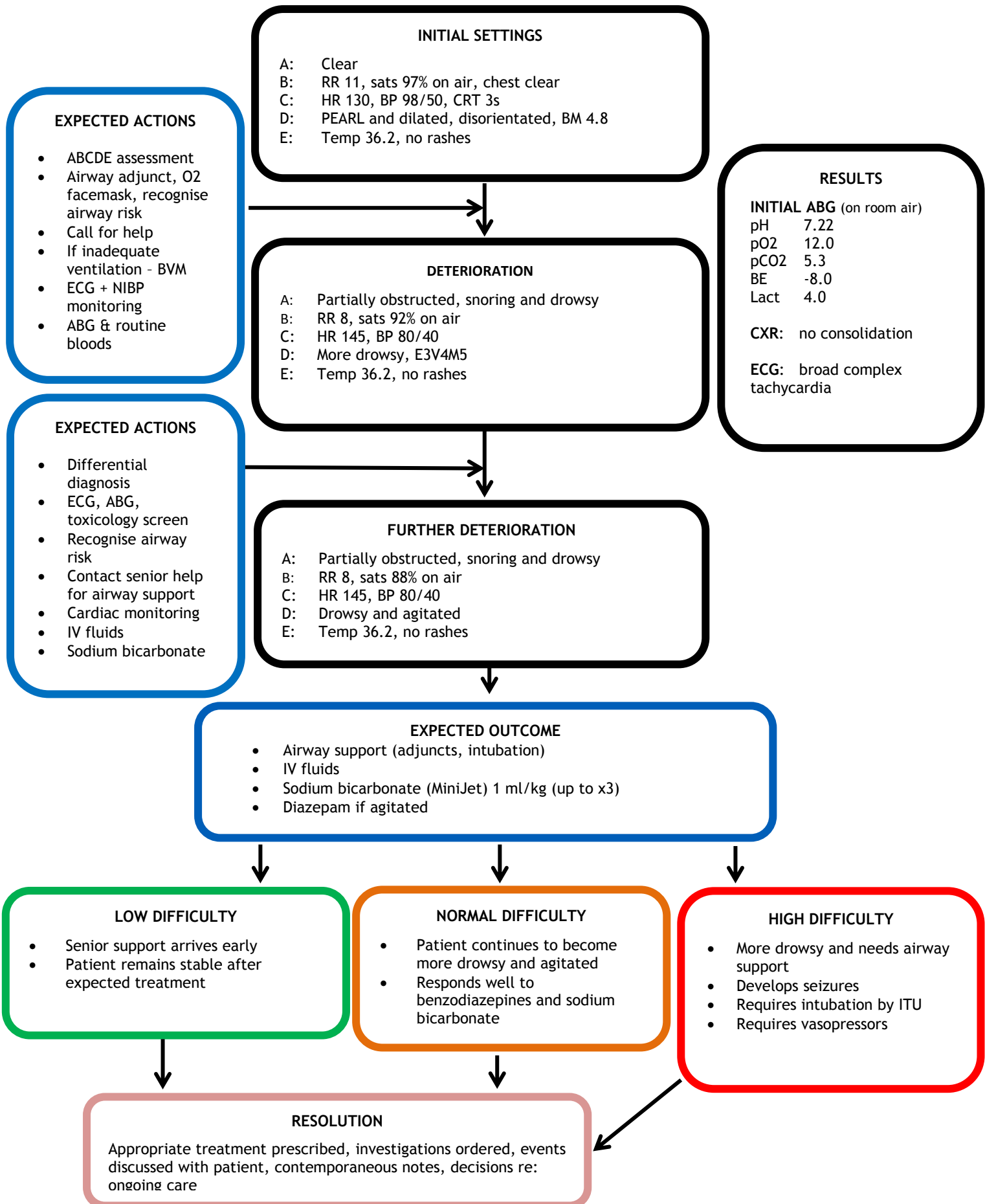
PAST MEDICAL HISTORY

- Nil of note
- No regular medication
- No known drug allergies

SOCIAL HISTORY

- University Student
- You split up from your long-term boyfriend this morning
- Your father died in a car crash a few months ago
- You are not very close to your mother and "she never listens to you". She has depression and difficulty sleeping and was prescribed the amitriptyline earlier this week

Scenario flowchart



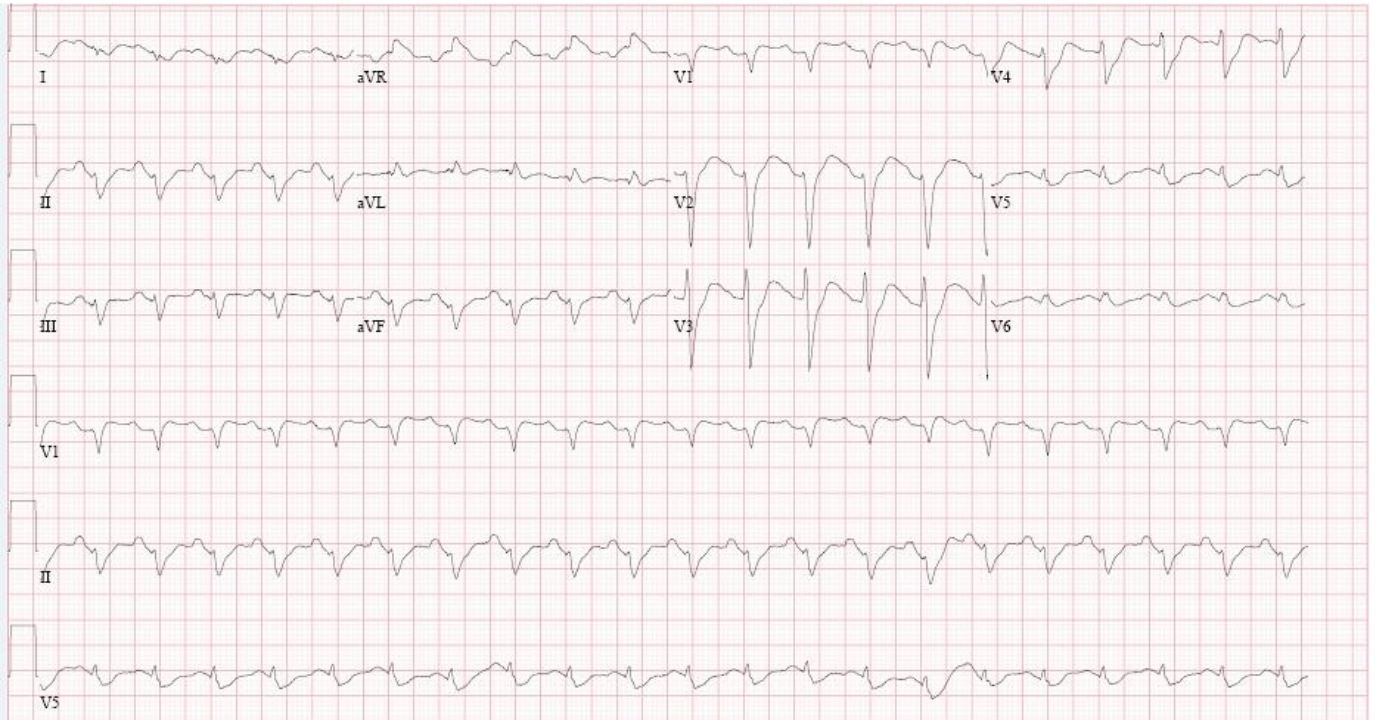
References

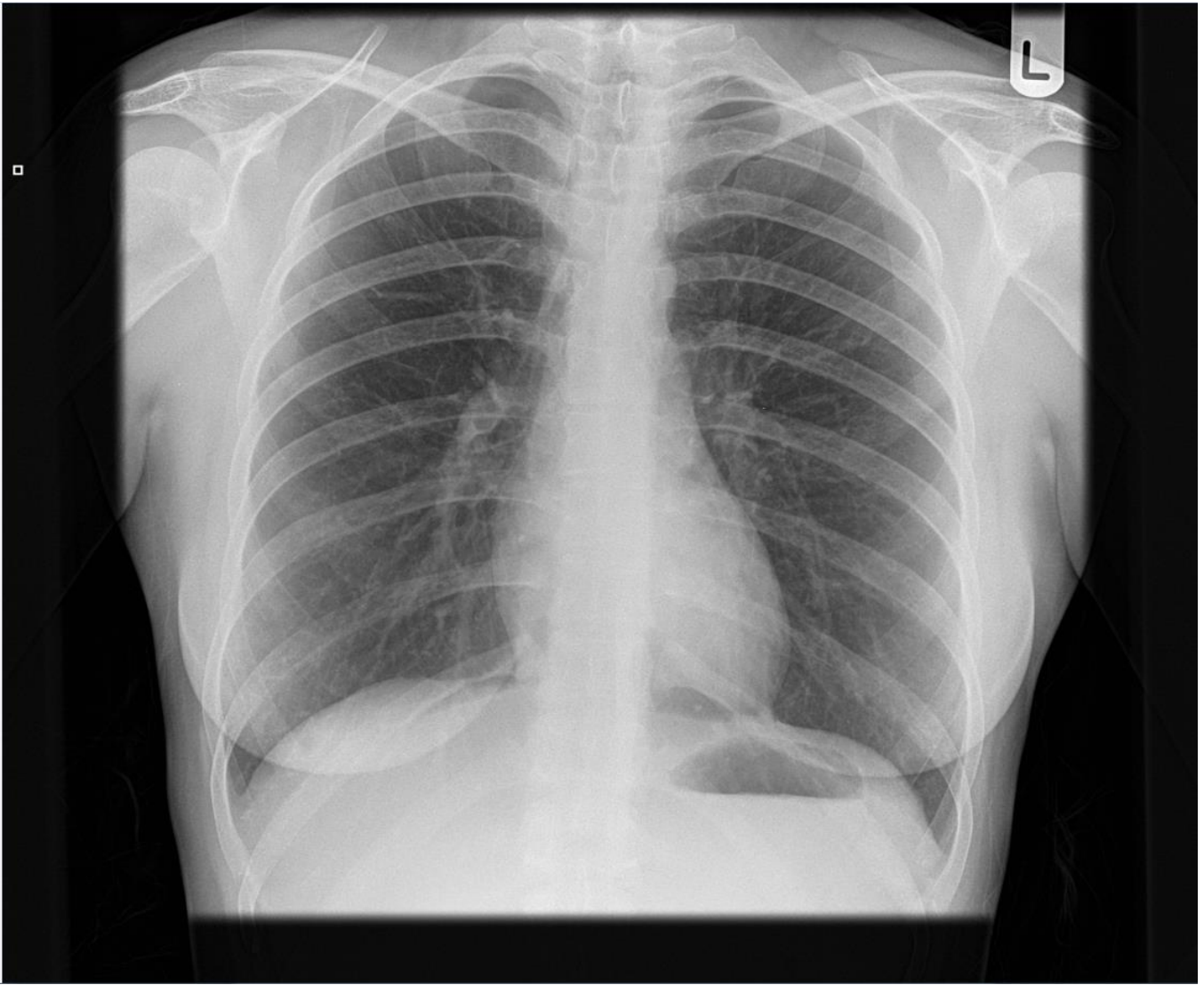
- Guideline for the management of tricyclic antidepressant overdose. The College of Emergency Medicine.
[https://www.rcem.ac.uk/docs/College%20Guidelines/5z32.%20Tricyclic%20Antidepressant%20Overdose%20-%20\(Flowchart\)%20\(Dec%202009\).pdf](https://www.rcem.ac.uk/docs/College%20Guidelines/5z32.%20Tricyclic%20Antidepressant%20Overdose%20-%20(Flowchart)%20(Dec%202009).pdf)
- NICE Clinical Knowledge Summaries. Poisoning or overdose; Scenario management. June 2017. Found at: <https://cks.nice.org.uk/poisoning-or-overdose#!scenario>

Clinical props

RADIOMETER ABL800 FLEX

Identifications			
Patient ID	789987		
Patient Last Name	TAPP		
Patient First Name	Penny		
Sex	Female		
Date of birth			
FO ₂ (I)		%	
T	37.0	C	
Sample type	Arterial		
Operator	TEMP FPH 1		
Blood Gas Values			
↓	pH	7.220	[7.350 - 7.450]
	pCO ₂	5.30 kPa	[4.70 - 6.00]
	pO ₂	12.0 kPa	[11.1 - 14.4]
	Hct _c	41.90 %	
Oximetry Values			
	ctHb	12.4 g/L	
	FO ₂ Hb	96.0 %	[94.0 - 98.0]
	sO ₂	96.0 %	
↑	FCOHb	2.5 %	[0.5 - 1.5]
	FHHb	0.1 %	[0.0 - 5.0]
	FMeHb	0.2 %	[0.0 - 1.5]
Calculated Values			
	cBase(Ecf) _c	-8.0 mmol/L	
	cHCO ₃ ⁻ (P) _c	16.0 mmol/L	
Electrolyte Values			
	cNa ⁺	139 mmol/L	[136 - 146]
	cK ⁺	4.0 mmol/L	[3.4 - 4.5]
	cCl ⁻	106 mmol/L	[98 - 106]
	cCa ²⁺	1.21 mmol/L	[2.2 - 2.45]
	Anion Gap _c	21.0 mmol/L	
Metabolite Values			
	cGlu	4.2 mmol/L	[3.9 - 5.8]
↑	cLac	4.0 mmol/L	[0.5 - 1.6]
	cCrea	88 μmol/L	[44 - 97]
Notes			
↑	Value(s) above reference range		
↓	Value(s) below reference range		
c	Calculated value(s)		





Name: <u>PENNY TAPP</u>		ADULT NEUROLOGICAL OBSERVATION CHART	
Hospital No:	NHS No:	Date:	Frequency:
D.O.B:	Ward:	Print name:	Sign:

RESPONSE	Description	hrs mins		Notes
		hrs	mins	
EYES OPEN	spontaneously	4	15	Eyes closed by swelling = C
	to speech	3		
	to pain	2		
	none	1		
BEST VERBAL RESPONSE	orientated	5	15	Endotracheal tube or Tracheostomy = T Dysphasia = D
	confused	4		
	inappropriate words	3		
	incomprehensible sounds	2		
	none	1		
BEST MOTOR RESPONSE	obeys commands	6	15	Record the best arm response Paralysed = P
	localises pain	5		
	normal flexion to pain	4		
	abnormal flexion to pain	3		
	extension to pain	2		
	none	1		

COMA SCORE 15 15 15

PUPILS	RIGHT	Size (mm)	Reaction	Notes
	LEFT	Size (mm)	Reaction	

+ = Reacts
 - = No Reaction
 C = Eye Closed
 SL = Sluggish Pupil

LIMB MOVEMENT	ARMS	Normal power Mild weakness Severe weakness Extension No response	Notes
	LEGS	Normal power Mild weakness Severe weakness Extension No response	

Record right (R) & left (L) separately if there is a difference between the two sides
Fractured limb = #



RESPIRATORY RATE	<u>12</u> <u>12</u>	
DELIVERED O ₂		
O ₂ Sats		
MET		
RANDOM GM	<u>6.4</u> <u>0.8</u>	
NURSE'S INITIALS		

Include nurse concern & urine output in MET score

FPH102

NEWS - OBSERVATION CHART



Frimley Health
NHS Foundation Trust

Surname: Tapp First name: Penny
Hospital number: 12345 D.O.B: 1.1.1997 Date of admission: Today

		DATE					DATE				
		TIME					TIME				
A+B Respirations Breaths/min	≥25										
	21-24										
	18-20										
	15-17										
	12-14										
	9-11										
	≤8										
A+B SpO2 Scale 1 Oxygen saturation (%)	≥96										
	94-95										
	92-93										
	≤91										
SpO2 Scale 2¹ Oxygen saturation (%) Use Scale 2 if target range is 88-92%, eg in hypercapnic respiratory failure <small>¹ ONLY use Scale 2 under the direction of a qualified clinician</small>	≥97 on O ₂										
	95-96 on O ₂										
	93-94 on O ₂										
	≥93 on air										
	88-92										
	86-87										
	84-85										
	≤83%										
Air or oxygen?	A=Air										
	O2 L/min										
	Device										
C Blood pressure mmHg Score uses systolic BP only	≥220										
	201-219										
	181-200										
	161-180										
	141-160										
	121-140										
	111-120										
	101-110										
	91-100										
	81-90										
	71-80										
61-70											
51-60											
	≤50										
C Pulse Beats/min	≥131										
	121-130										
	111-120										
	101-110										
	91-100										
	81-90										
	71-80										
	61-70										
	51-60										
	41-50										
	31-40										
	≤30										
D Consciousness Score for NEW onset of confusion (no score if chronic)	Alert										
	Confusion										
	V										
	P										
	U										
E Temperature °C	≥39.1°										
	38.1-39.0°										
	37.1-38.0°										
	36.1-37.0°										
	35.1-36.0°										
	≤35.0°										
NEWS TOTAL											
Monitoring frequency											
Pain score											
Initials											

National Early Warning Score 2 (NEWS2) © Royal College of Physicians 2017

Version: 201807_004

Product Code:

Hospital Number: 789987			
NHS Number:			
Title: <i>Mrs</i> Sex: <i>F</i> DoB: Age: <i>20</i> yrs Surname: <i>Penwt</i> First name: <i>Narr</i> Address: <i>Ed</i> Postcode: Tel (H): Tel (M): Employer / educ. est: Religion: Language:		NOK: <i>Mother</i> Address: <i>Same as</i> Relationship: Tel (H): Tel (M): NOK: Address: Relationship: Tel (H): Tel (M):	
Source of Referral: Date of Arrival: Time of Arrival: Mode of arrival: No of Attendances in past year: Previous Attendance Number: <i>ED-12-051816-1</i> To be seen in: <i>Majors</i>		GP: Address: Tel No: Fax No:	
Speciality Expected: Speciality:	Time referred to speciality: Time seen:	Duty/On-Call Emergency Department Consultant:	
Presenting Complaint:			
Triage Nurse: <i>C. JACKSON</i>		Time of Triage	
Presenting Complaint: <i>unwell</i>		Triage (ESI):	<i>3</i>
History of Presenting Complaint: <i>pt drowsy + confused</i>		Pain Score	
On Assessment: <i>Reluctant to communicate.</i>		Allergies	
Previous Medical History:		Tetanus Status	
Social History:		Triage Treatment	
		Triage Notes	
Temperature	<i>36.8°C</i>	Blood Pressure	<i>98/50</i>
Pulse	<i>130</i>	SP O ₂ (Air)	<i>97</i>
Respiratory rate	<i>11</i>	Pupils (Left)	
Peak Flow	(Pre/Post)	Blood sugar	
		Nurse Concern	
		GCS	<i>E V M = 4/15</i>
		Pupils (Right)	
		Weight	
MET SCORE =			



Name	Signature	Initials	Position	Speciality	Date	Time

*Have you considered the use of a Chaperone when seeing this patient,
Please refer to the Trust and Emergency Department Chaperone Policy.*

Chaperone Used? Y / N

Name: _____

Presenting Complaint:

HISTORY: (Please continue on continuation sheets if necessary)

	Age >65	
	3 Coronary Artery Disease (CAD) Risk Factors: Family history, raised cholesterol, diabetes mellitus, hypertension, active smoker	
	Known CAD stenosis >50%	
	Aspirin use in past 7 days	
	Recent (<24 hours) severe angina	
	Raised cardiac markers (CK)	
	ST deviation >0.5mm	
	TIMI Risk Score	
	Age >60	
	BP >140/90	
	Clinical features: Unilat weak (2 pts) Speech only (1 pt)	
	Duration: >60 mins (2 pt) 10-59 mins (1 pt) <10 mins (0 pt)	
	Diabetic	
	ABCD2 Score (max 7)	
	Women of Childbearing age? LMP: Pregnant? Y / N	



Past Medical History

Diabetes AF Hx Dementia Hypertension IHD/Angina
 COPD Arthritis Epilepsy Asthma Pacemaker

(Please tick relevant conditions if present)

Drugs

Is the patient on anti-cancer medication? YES/NO If yes, what?
Please contact Lead Chemo Nurse on bleep 277

Allergies

Drug	Reaction	Date



EXAMINATION

Jaundiced Anaemic Cyanosed Clubbed Lymphadenopathy

Temp Cap Blood Glucose.....

General Impression:

Cardiovascular

HR reg / irreg BP sitting

BP lying..... BP Standing (Remember >2 mins for Postural BPs)

HS..... Murmur? Y N Carotid Bruit? Y N

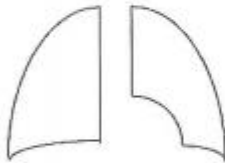
JVP Oedema

Respiratory

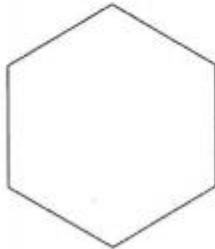
RR Sats on Air Sats on% O₂

Current PEFR..... Best PEFR Predicted PEFR

Percussion / Auscultation



Abdominal



Ascites? Y / N

PR

PV



Hosp No.: 789987

Neurological

GCS: E V M /15

Pupils:

Cranial Nerves: (Not Assessed - tick here:)

Abnormalities:

Peripheral Nerves: (Not Assessed - tick here:)

		Power			Reflexes		Tone	
		Right	Left		Right	Left	Right	Left
Shoulders	abd (c5,6)							
	add (c5,6,7)							
Elbow	flex (c5,6)			Biceps (c5,6)				
	ext (c7,8)			Triceps (c7,8)				
Wrists	flex (c6,7,8)			Supinator (c6)				
	ext (c7,8)							
Hips	flex (l1,2,3)							
	ext (l5,s1,2)							
	abd (l4,5,s1)							
	add (l2,3,4)							
Knees	flex (l4,5,s1,2)			Knee (l2-4)				
	ext (l2,3,4)							
Ankles	flex (l4,5,s1,2)			Ankle (s1,2)				
	ext (s1,2)			Plantar (l5-s2)				

Cerebellar Signs:

Nystagmus Gait

Finger/Nose Dysdiadochokinesis

Heel/shin Dysarthria

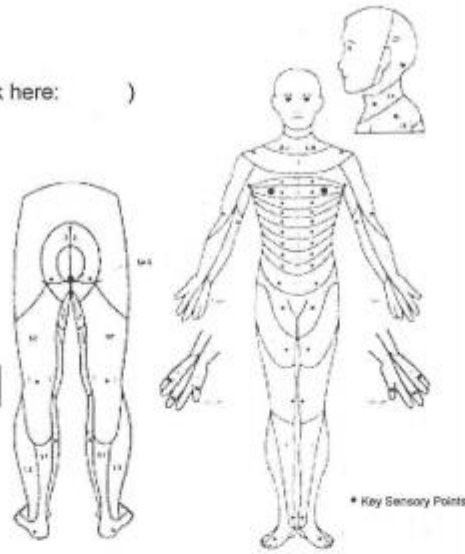
Romberg's test



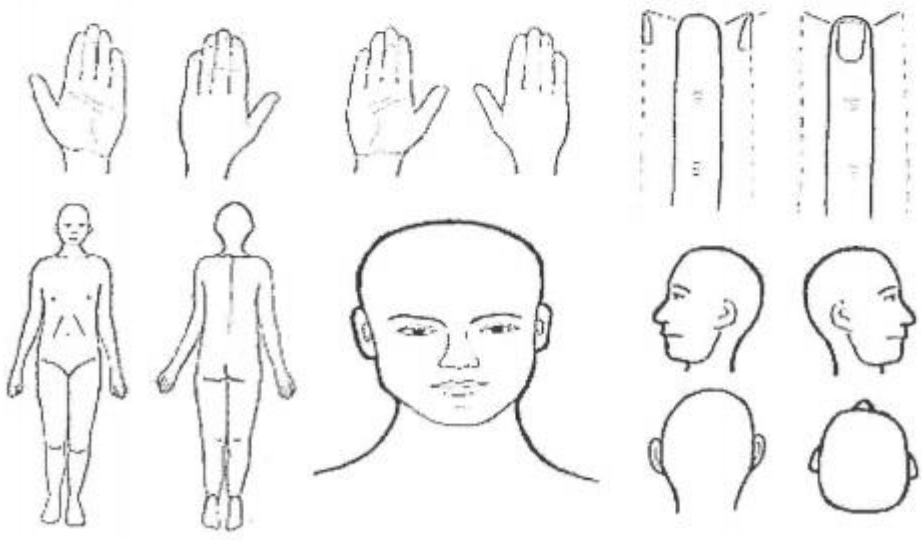
Sensation

(Not Assessed - tick here:)

Anal sensation? Y N



Other examination findings / comments:





Initial Impressions / Differential Diagnosis:

Investigations:

Radiology: CXR AXR CT Head Other.....

Results:

Bloods: FBC Coag / INR ESR
 U&Es LFTs Bone CRP
 Other

Results:

Hb	MCV	Na	Bill	AST	Chol
WCC	B12	K	Alk P	GGT	HDL
Neut	Folate	Ur	ALT	Amylase	TG
Plt	PT	Creat	Alb	CK	LDL
ESR	APTT	Glucose	PO4	Trop (1)	TSH
	INR	CRP	Cor Ca	Trop (2)	FT4

Others:

ECG Urine β HCG ABG Other

Results:



Management Plan:

	Discharge? Y / N Refer? Speciality Admit CDU? (consider VTE prophylaxis) Decision time
--	---

VTE Risk? Please assess on separate risk assessment sheet	
Have you started VTE prophylaxis?	Y N
If not - reasons:	
MRSA Status:	C. Diff status:
Met Calls Y N	For CPR? Y N
	Orange sticker? Y N

Senior Review: Name: Designation:.....

Time Date Signature

Frimley Park Hospital

First Name(s): <u>PENNY</u>	Ward	Date chart started	Chart number
Surname: <u>TAPP</u>			
Hospital Number: <u>789987</u>	Consultant	Doctor bleep number	Date of admission
NHS Number: _____			
Date of Birth: _____			

Date weighed	Weight (kg)	Date weighed	Weight (kg)	Height (M)	Surface area (M ²)	Ideal Body Weight (IBW)	Body Mass Index (BMI)	Diet

Allergies (write 'none known' and sign if none known). This section must be completed before medication is given.

Drug/substance	Details of reaction

This patient also has the following additional charts (complete and tick relevant box (es))

IV heparin infusion chart	<input type="checkbox"/>	Chemotherapy chart	<input type="checkbox"/>	MRSA Suppression	<input type="checkbox"/>
PCA	<input type="checkbox"/>	Epidural	<input type="checkbox"/>	Medicines reconciliation	<input type="checkbox"/>

Reminder: Prescriptions must be rewritten not amended
Unclear prescriptions will be challenged
Care with opioids if elderly, frail and/or renal impairment

Date	Communication for doctors. Messages must be actioned within 24 hours.	Sign and Bleep No.	Actioned sign and date

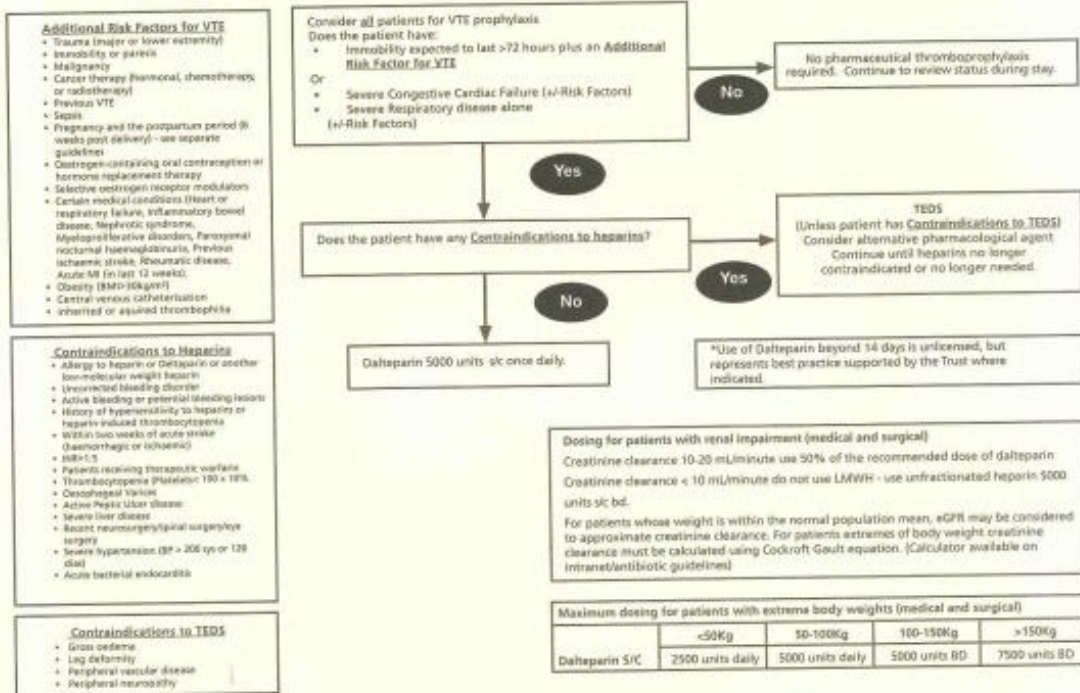
Smoking		Alcohol	
Is the patient a smoker	Yes / No	Audit C score	
Is NRT currently in use	Yes / No	Full Audit score (if undertaken)	
		Withdrawal medication required	

Is patient self medicating: Yes / No
Level 1 / 2 / 3

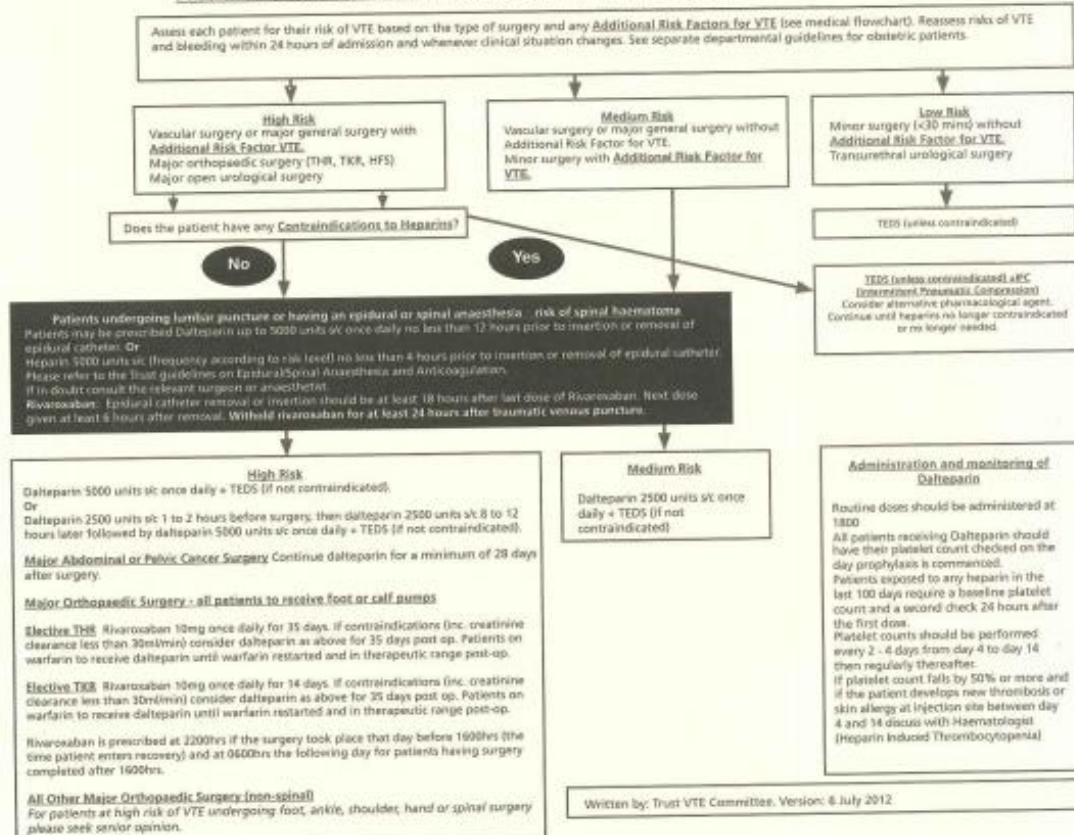
Date chart rewritten / / TTO written / /

Needs: Large print PMR card

Prevention of Venous Thromboembolism in Acutely ill Adult Medical Patients (non-obstetric)



Prevention of Venous Thromboembolism in Adult Surgical Patients



RISK ASSESSMENT RECORD SHEET FOR VENOUS THROMBOEMBOLISM (VTE)

- Please use in conjunction with Trust guidelines overleaf
- Please see separate Trust guidelines for obstetric patients

Thrombosis Risk	Patient Related	Procedure Related	Initial Assessment _/_/_	Assessment at 24 hours _/_/_	Assessment at _/_/_	Assessment at _/_/_	
High	Previous VTE						
	Immobility expected to last >72 hours						
	Malignancy						
	Acute or chronic lung disease						
	Acute or chronic inflammatory disease						
	Chronic heart failure						
	Lower limb paralysis (excluding acute stroke)						
	Acute infectious disease, e.g. pneumonia						
	BMI >30kg/m2						
	Inherited or acquired thrombophilia						
	Pregnancy or less than 6 weeks post partum						
		Hip or Knee replacement					
		Hip fracture					
	Other major orthopaedic surgery						
	Surgical procedure lasting >30mins with additional VTE risk factor(s)						
Medium	Oestrogen containing oral contraception or HRT						
	Selective oestrogen receptor modulators						
	Age > 60						
	Dehydration						
	Varicose veins with phlebitis						
		Minor surgical procedure with additional VTE risk factor(s)					
	Surgical procedure lasting >30mins with no additional VTE risk factors						
	Plaster cast immobilisation of lower limb						
Low	None of above	None of above					
Bleeding Risk/Contraindications	Patient Related	Procedure Related					
	Haemophilia or other known bleeding disorder						
	Thrombocytopenia (Platelets < 100 x 10 ⁹ /L)						
	Within two weeks of acute stroke (haemorrhagic or ischaemic)						
	Severe hypertension (BP > 200 systolic or 120 diastolic)						
	Severe liver disease						
	Oesophageal Varices						
	Active Peptic Ulcer disease						
	Active bleeding or potential bleeding lesions						
	Major bleeding risk, existing anticoagulant therapy						
	Severe renal disease						
		Neurosurgery, spinal surgery or eye surgery					
		Other procedure with high bleeding risk					
		Lumbar puncture/spinal/epidural in previous 4 hours or anticipated in next 12 hours					
Risk assessment performed by							
Signature							
Copy of Patient Information Leaflet given to patient			Yes	No			

ONCE ONLY DRUGS AND PREMEDICATION.

Date	Time	Drug	Dose	Route	Prescriber Sig. GMC no.	Batch number (vaccines only)	Time given	Sig.	Pharm.

DRUGS ADMINISTERED UNDER MIDWIFERY EXEMPTION AND PATIENT GROUP DIRECTIONS.

Date	Time	Drug	Dose	Route	Batch number (vaccines and blood products only)	Print name	Sig.

REASONS FOR DRUGS NOT ADMINISTERED AND ACTIONS TAKEN.

Date	Time	Drug (s)	Nurses signature	Reason(s) for non administration and action(s) taken

FOR DRUGS NOT ADMINISTERED ENTER THE APPROPRIATE CODE IN THE ADMINISTRATION BOX AND SIGN

1 NIL BY MOUTH
2 REFUSED
3 UNABLE (NEEDS)

REGULAR PRESCRIPTIONS

OXYGEN

Circle target saturation
Adjust flow rate to maintain specified oxygen saturation

Target oxygen saturation
BB to 92% 94 to 98%

PRESCRIBERS SIGNATURE _____ DATE _____

Home Oxygen Indicated: YES / NO
Referral to Respiratory Nurse for HODP Date: _____

Other: _____

Nurse to initial against time to confirm oxygen is being administered and meeting specified target. Flow rate is to be documented to the left of the column, i.e. 2L Sign

TIME	MONTH/YEAR	DATE
0800		
1200		
1800		
2200		
Device		

PHARMACOLOGICAL VTE PROPHYLAXIS/TREATMENT INCLUDING HDACS DOSE ROUTE

PRESCRIBERS SIGNATURE GMC No. START REVIEW STOP

INDICATION AND SPECIAL INSTRUCTIONS Please tick appropriate status
 NEW PRE AD CHANGE

PHARMACY TO CONTINUE ON YES
POD H POD W DISCHARGE NO

MECHANICAL VTE PROPHYLAXIS DOSE ROUTE

PRESCRIBERS SIGNATURE GMC No. START REVIEW STOP

INDICATION AND SPECIAL INSTRUCTIONS Please tick appropriate status
 NEW PRE AD CHANGE

PHARMACY TO CONTINUE ON YES
POD H POD W DISCHARGE NO

WARFARIN AND OTHER COUMARIN ANTICOAGULANTS TIME INR

PRESCRIBERS SIGNATURE GMC No. DATE STARTED DOSE (mg)

INDICATION DURATION TARGET INR PLEASE TICK APPROPRIATE STATUS
 NEW PREADMISSION PRESCRIBERS SIGNATURE

PHARMACY BOOK PROVIDED ON: DATE COUNSELLED: TO CONTINUE ON YES
POD H POD W BY: BY: DISCHARGE NO GIVEN BY

DRUG (Approved Name) DOSE ROUTE

PRESCRIBERS SIGNATURE GMC No. START REVIEW STOP

INDICATION AND SPECIAL INSTRUCTIONS Please tick appropriate status
 NEW PRE AD CHANGE

PHARMACY TO CONTINUE ON YES
POD H POD W DISCHARGE NO

DRUG (Approved Name) DOSE ROUTE

PRESCRIBERS SIGNATURE GMC No. START REVIEW STOP

INDICATION AND SPECIAL INSTRUCTIONS Please tick appropriate status
 NEW PRE AD CHANGE

PHARMACY TO CONTINUE ON YES
POD H POD W DISCHARGE NO

DRUG (Approved Name) DOSE ROUTE

PRESCRIBERS SIGNATURE GMC No. START REVIEW STOP

INDICATION AND SPECIAL INSTRUCTIONS Please tick appropriate status
 NEW PRE AD CHANGE

PHARMACY TO CONTINUE ON YES
POD H POD W DISCHARGE NO

DRUG (Approved Name) DOSE ROUTE

PRESCRIBERS SIGNATURE GMC No. START REVIEW STOP

INDICATION AND SPECIAL INSTRUCTIONS Please tick appropriate status
 NEW PRE AD CHANGE

PHARMACY TO CONTINUE ON YES
POD H POD W DISCHARGE NO

WHEN REQUIRED MEDICATION

OXYGEN				Date										
CIRCLE TARGET OXYGEN SATURATION 88-92% 94-98% Other				Time Started										
				Flow Rate										
DEVICE		MAX FLOW RATE (Liters/min)		Device										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Given by										
DRUG (Approved name)				Date										
DOSE	ROUTE	FREQUENCY		Time										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Date										
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD	Route										
PHARMACY POD H POD W		TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by									
DRUG (Approved name)				Date										
DOSE	ROUTE	FREQUENCY		Time										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Date										
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD	Route										
PHARMACY POD H POD W		TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by									
DRUG (Approved name)				Date										
DOSE	ROUTE	FREQUENCY		Time										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Date										
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD	Route										
PHARMACY POD H POD W		TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by									
DRUG (Approved name)				Date										
DOSE	ROUTE	FREQUENCY		Time										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Date										
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD	Route										
PHARMACY POD H POD W		TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by									
DRUG (Approved name)				Date										
DOSE	ROUTE	FREQUENCY		Time										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Date										
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD	Route										
PHARMACY POD H POD W		TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by									
DRUG (Approved name)				Date										
DOSE	ROUTE	FREQUENCY		Time										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Date										
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD	Route										
PHARMACY POD H POD W		TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by									
DRUG (Approved name)				Date										
DOSE	ROUTE	FREQUENCY		Time										
PRESCRIBER'S SIGNATURE		GMC No.	DATE	Date										
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD	Route										
PHARMACY POD H POD W		TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by									

WHEN REQUIRED MEDICATION

DRUG (Approved name)				Date																
DOSE	ROUTE	FREQUENCY		Time																
PRESCRIBER'S SIGNATURE		GMC No.	DATE		Dose															
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD		Route															
PHARMACY			TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by														
POD H POD W																				
DRUG (Approved name)				Date																
DOSE	ROUTE	FREQUENCY		Time																
PRESCRIBER'S SIGNATURE		GMC No.	DATE		Dose															
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD		Route															
PHARMACY			TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by														
POD H POD W																				
DRUG (Approved name)				Date																
DOSE	ROUTE	FREQUENCY		Time																
PRESCRIBER'S SIGNATURE		GMC No.	DATE		Dose															
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD		Route															
PHARMACY			TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by														
POD H POD W																				
DRUG (Approved name)				Date																
DOSE	ROUTE	FREQUENCY		Time																
PRESCRIBER'S SIGNATURE		GMC No.	DATE		Dose															
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD		Route															
PHARMACY			TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by														
POD H POD W																				
DRUG (Approved name)				Date																
DOSE	ROUTE	FREQUENCY		Time																
PRESCRIBER'S SIGNATURE		GMC No.	DATE		Dose															
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD		Route															
PHARMACY			TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by														
POD H POD W																				
DRUG (Approved name)				Date																
DOSE	ROUTE	FREQUENCY		Time																
PRESCRIBER'S SIGNATURE		GMC No.	DATE		Dose															
INDICATION AND SPECIAL INSTRUCTIONS			<input type="checkbox"/> NEW <input type="checkbox"/> PRE AD		Route															
PHARMACY			TO CONTINUE ON DISCHARGE		<input type="checkbox"/> YES <input type="checkbox"/> NO	Given by														
POD H POD W																				

Reminder: Prescribe on regular prescription and state "see variable prescription"

MONTH/YEAR →
DATE

Insulins - variable dosing

DRUG (Approved name)		ROUTE	SIG →	TIMES	
		S/C		Units	Sig
PRESCRIBERS SIGNATURE		GMC No.	START	STOP	
DEVICE		Please tick appropriate status <input type="checkbox"/> NEW <input type="checkbox"/> PRE AD			
PHARMACY		TO CONTINUE ON DISCHARGE <input type="checkbox"/> YES <input type="checkbox"/> NO			
POD H POD W					
DRUG (Approved name)		ROUTE	SIG →	TIMES	
		S/C		Units	Sig
PRESCRIBERS SIGNATURE		GMC No.	START	STOP	
DEVICE		Please tick appropriate status <input type="checkbox"/> NEW <input type="checkbox"/> PRE AD			
PHARMACY		TO CONTINUE ON DISCHARGE <input type="checkbox"/> YES <input type="checkbox"/> NO			
POD H POD W					
DRUG (Approved name)		ROUTE	SIG →	TIMES	
		S/C		Units	Sig
PRESCRIBERS SIGNATURE		GMC No.	START	STOP	
DEVICE		Please tick appropriate status <input type="checkbox"/> NEW <input type="checkbox"/> PRE AD			
PHARMACY		TO CONTINUE ON DISCHARGE <input type="checkbox"/> YES <input type="checkbox"/> NO			
POD H POD W					
DRUG (Approved name)		ROUTE	SIG →	TIMES	
		S/C		Units	Sig
PRESCRIBERS SIGNATURE		GMC No.	START	STOP	
DEVICE		Please tick appropriate status <input type="checkbox"/> NEW <input type="checkbox"/> PRE AD			
PHARMACY		TO CONTINUE ON DISCHARGE <input type="checkbox"/> YES <input type="checkbox"/> NO			
POD H POD W					

WHEN REQUIRED INSULINS

DRUG (Approved name)		Date							
DOSE (UNITS)	ROUTE	FREQUENCY	Time						
PRESCRIBERS SIGNATURE		GMC No.	DATE	DOSE (In Units)					
INDICATION AND SPECIAL INSTRUCTIONS				Route					
PHARMACY				Given by					
DRUG (Approved name)		Date							
DOSE (UNITS)	ROUTE	FREQUENCY	Time						
PRESCRIBERS SIGNATURE		GMC No.	DATE	DOSE (In Units)					
INDICATION AND SPECIAL INSTRUCTIONS				Route					
PHARMACY				Given by					
DRUG (Approved name)		Date							
DOSE (UNITS)	ROUTE	FREQUENCY	Time						
PRESCRIBERS SIGNATURE		GMC No.	DATE	DOSE (In Units)					
INDICATION AND SPECIAL INSTRUCTIONS				Route					
PHARMACY				Given by					

Q/L	mg	Units	Eq	Units	Eq	Units	Eq	Units	Eq	Units	Eq	Units	Eq	Units	Eq	Units	Eq	Units	Eq

INSULIN SLIDING SCALE

Human soluble insulin (Actrapid)
 50 UNITS in 50mL sodium chloride 0.9% IV INFUSION

Date																				
Time																				
Given by																				
Checked by																				

BLOOD GLUCOSE RESULT	INSULIN DOSE TO BE GIVEN (UNITS/HOUR)
PREScriBER SIGNATURE GMC No.	DATE

BLOOD GLUCOSE RESULT	INSULIN DOSE TO BE GIVEN (UNITS/HOUR)
PREScriBER SIGNATURE GMC No.	DATE

BLOOD GLUCOSE RESULT	INSULIN DOSE TO BE GIVEN (UNITS/HOUR)
PREScriBER SIGNATURE GMC No.	DATE

ANTIMICROBIAL PRESCRIPTIONS ONLY

DRUG (Approved name)		DOSE		ROUTE
PRESCRIBER'S SIGNATURE		GMC No.	INDICATION (MANDATORY)	
START	48 HOUR REVIEW	2ND REVIEW DATE / TIME	3RD REVIEW DATE / TIME	STOP
REVIEWED BY ⇨				
PHARMACY				
POD H POD W				

DATE →																				
TIMES																				

DRUG (Approved name)		DOSE		ROUTE
PRESCRIBER'S SIGNATURE		GMC No.	INDICATION (MANDATORY)	
START	48 HOUR REVIEW	2ND REVIEW DATE / TIME	3RD REVIEW DATE / TIME	STOP
REVIEWED BY ⇨				
PHARMACY				
POD H POD W				

DATE →																				
TIMES																				

DRUG (Approved name)		DOSE		ROUTE
PRESCRIBER'S SIGNATURE		GMC No.	INDICATION (MANDATORY)	
START	48 HOUR REVIEW	2ND REVIEW DATE / TIME	3RD REVIEW DATE / TIME	STOP
REVIEWED BY ⇨				
PHARMACY				
POD H POD W				

DATE →																				
TIMES																				

DRUG (Approved name)		DOSE		ROUTE
PRESCRIBER'S SIGNATURE		GMC No.	INDICATION (MANDATORY)	
START	48 HOUR REVIEW	2ND REVIEW DATE / TIME	3RD REVIEW DATE / TIME	STOP
REVIEWED BY ⇨				
PHARMACY				
POD H POD W				

DATE →																				
TIMES																				

DRUG (Approved name)		DOSE		ROUTE
PRESCRIBER'S SIGNATURE		GMC No.	INDICATION (MANDATORY)	
START	48 HOUR REVIEW	2ND REVIEW DATE / TIME	3RD REVIEW DATE / TIME	STOP
REVIEWED BY ⇨				
PHARMACY				
POD H POD W				

DATE →																				
TIMES																				

DRUG (Approved name)		DOSE		ROUTE
PRESCRIBER'S SIGNATURE		GMC No.	INDICATION (MANDATORY)	
START	48 HOUR REVIEW	2ND REVIEW DATE / TIME	3RD REVIEW DATE / TIME	STOP
REVIEWED BY ⇨				
PHARMACY				
POD H POD W				

DATE →																				
TIMES																				

MRSA Status

New	Previous Admission

C. Diff Status

New	Previous Admission

ONCE DAILY GENTAMICIN PRESCRIPTION

Use gentamicin calculator or intranet to calculate dose.

Level must be taken 6 to 14 hours after the first dose has been given.

Specify Dosing Regime 5mg/kg 3mg/kg Other

Indication: _____

Date to be given	Time to be given	Dose (mg)	Prescribers signature GMC No.	Date of sig.	Start time of infusion	Given by: (sign)	Date and Time blood level taken	Time sign:	Gentamicin Levels mg/l

General Guidance

- All antimicrobial prescriptions MUST follow the Trust's Antimicrobial Policies or MUST have been agreed by Microbiology. See full up to date policy on intranet.
- INDICATION, STOP AND REVIEW DATES MUST BE RECORDED ON THE CHART.**
- CURB 65 score **MUST** be recorded for all community acquired pneumonia.
- Check previous relevant microbiology results before prescribing antibiotics and check new microbiology results daily. If a patient is not responding to treatment seek advice from a consultant microbiologist.
- Doses need to be adjusted to suit patient's age, size and renal function. To calculate creatinine clearance use calculator on intranet and see dose adjustments for antibiotics.
- All IV regimes **MUST** be reviewed at 48 hours and switched to oral if appropriate.

IV SWITCH GUIDELINES

IF YES to all, consider change to ORAL	IF YES to any, remain on IV
Patient able to swallow and tolerate oral fluids?	Oral route compromised?
Temperature settling and < 38°C for at least 48hrs?	Continuing serious sepsis?
Heart rate <100bpm for last 12hrs? (no unexplained tachycardia)	Febrile with neutropenia?
WCC between 4-12x10 ⁹ /L?	Specific indication / deep seated infection. (Meningitis, endocarditis, encephalitis, osteomyelitis, neutropenia, cystic fibrosis, septicaemia, haematology/ immunocompromised pts, continuing sepsis, other severe infections as discussed with microbiology.) Seek microbiology advice if unsure.
Oral formulation available?	
Others markers: BP stable Respiratory rate <20 breaths/min CRP returning to normal and less than 100 (adult)	
Absence of mental confusion (when representing symptoms of infection)	No oral formulation available (seek microbiology advice on alternative)

NOTE: DRUGS MUST NOT BE ADDED TO BLOOD PRODUCTS

Does the patient require CMV negative blood? (Indicate as appropriate) Yes / No?

Does the patient need irradiated blood? (Indicate as appropriate) Yes / No?

Name: _____
 Hospital Number: _____
 NHS Number: _____
 Date of Birth: _____

BLOOD PRODUCTS TO BE ADMINISTERED

(INCLUDING INTRAVENOUS IMMUNOGLOBULINS)

Date and Time to be administered	Blood product	Total volume	Route	Drugs required to cover infusion (must be prescribed on once only section of chart)	Duration / rate of infusion	Signature GMC No.	Batch number/Unit number (Attach sticker)	Start time / stop time	Given by/ checked by	Did patient experience adverse reaction? (Yes/No) ◀
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No
										Yes / No

Complete label attached to blood product. Detach and return bottom portion via the pink wallet (if available, if not please post to Blood bank)

◀IF THE PATIENT EXPERIENCES TRANSFUSION RELATED PROBLEMS THESE MUST BE CONTEMPORANEOUSLY RECORDED IN THE PATIENT'S MEDICAL NOTES, AND A TRANSFUSION REACTION FORM AND INCIDENT FORM COMPLETED.

DRUGS TO BE ADMINISTERED BY INTRAVENOUS / SUBCUTANEOUS INFUSION

Date	Time	Infusion solution	Drugs to be added	Total volume	Route	Complete either or		Signature GMC No.	Start time/stop time	Given by/ checked by	Pharm.
						Rate	Duration of infusion				

TCA Overdose Guidance

OVERVIEW

Commonly encountered drugs: amitriptyline, imipramine, clomipramine, desipramine, dosulepin (dothiepin), lofepramine, nortriptyline

Although not the first line choice for depression having lost place to SSRIs, TCAs have proven efficacy and are also used for behavioural disorders, eating disorders, neuropathic pain and migraine

TCA overdose is **one of the commonest causes of death from poisoning**. UK figures from Office of National Statistics (2011): 200 deaths out of 2652 recorded overdoses

Half of the in-hospital fatalities will have trivial toxicity on arrival to hospital but develop major toxicity within 1 hour; this is due to rapid absorption from the GI tract and saturation of hepatic enzymes responsible for metabolism

PHARMACOLOGY

As always, toxic effects of TCAs are predictable from knowledge of their basic pharmacology!

Therapeutically, TCAs **primarily block serotonin and noradrenaline reuptake**, increasing their available concentrations (?mechanism of action in depression)

They are pharmacologically “dirty” and **also block histamine and cholinergic muscarinic receptors and sodium and other membrane ion channels**

KINETICS

They are rapidly absorbed and undergo **enterohepatic recirculation**

They are largely (>90%) bound in the plasma to alpha-1-acid glycoprotein but **acidosis increases free drug concentration, augmenting toxicity...**

...this explains the use of **alkalinisation** to treat toxicity. Free concentrations of drug fall by 20% when pH rises from 7.0 >> 7.4 and by 42% over a pH range of 7.4 - 7.8

MECHANISM OF ACTION

RECEPTOR	ACTION	EFFECT	TOXICITY
Na ⁺ channels	Blockade	Prolong phase 0 of cardiac action potential	Widened QRS Dysrhythmias

RECEPTOR	ACTION	EFFECT	TOXICITY
K ⁺ channels	Blockade	Prolong phase 3 of cardiac action potential	Prolonged QT
Uncoupled mitochondrial oxidative phosphorylation		Direct depression of cardiac myocytes	Hypotension (late) *
alpha-1 adrenergic	Blockade	Vasodilatation	
NA & 5HT reuptake	Blockade	Hypertension and tachycardia (early) *	
Muscarinic	Blockade	Classic anticholinergic effects: dry mouth, blurred vision tachycardia, ileus urinary retention	Tachycardia Delirium
Histamine	Blockade	Sedation	Drowsiness

Seizures are well-known but they are **idiosyncratic**; the mechanism is poorly understood (Na⁺ channel blockade should theoretically be protective). Possible GABA effect?

CLINICAL FEATURES

In acute TCA overdose there are **three major toxic syndromes**

- ANTICHOLINERGIC SYNDROME

- Dry mouth
- Blurred vision (moderate pupillary dilatation/cycloplegia)
- Tachycardia
- Ileus
- Urinary retention

In addition, patients may show central signs of **delirium**; this is not a discrete entity but a spectrum of symptoms and signs. Delirium may persist for several days

- Hypervigilance
- Suspicion
- Disorientation
- Hallucinations

CARDIAC TOXICITY

The cardiovascular response is **biphasic**

Initial state is one of **tachycardia and hypertension** due to blockade of noradrenaline reuptake and the anticholinergic effects

With severe toxicity this decays to **hypotension and (relative) bradycardia** due to the blockade of alpha-1 receptors and direct myocardial depression

This may be compounded by severe, refractory **dysrhythmia**

ECG changes are multitude; see investigations section. Of particular concern are **widened QRS** and **bradycardia** which may signal **imminent cardiac arrest**

- Sinus tachycardia
- AF and atrial flutter
- SVT
- VT
- VF
- Bradycardia >> asystole

CNS TOXICITY

- Sedation > coma
- Delirium (see Anticholinergic Syndrome)
- Hyperreflexia including myoclonus
- **Seizures**
-

Seizures can be very difficult to treat - get help!

KEY INVESTIGATIONS

ECG

Perform an ECG early! **The ECG is the most accurate predictor of toxicity** for the majority of tricyclic antidepressant poisonings

Minor ECG changes are common:

- Sinus tachycardia
- Increase in the PR interval
- Nonspecific T-wave changes

More serious changes reflect altered conduction through Purkinje fibres due predominately to sodium channel blockade. Measurements that predict major toxicity include:

- **Prolonged QRS** (>100ms)
- **Right axis deviation** or RBBB
- Height of R wave and R/S ratio in aVR > 0.7
- Brugada syndrome

Arterial Blood Gases (ABG)

In **severe poisonings** a mixed respiratory and metabolic acidosis is common

Assess adequacy of ventilation in patients with decreased GCS - a respiratory acidosis (increased PCO₂) mandates ventilatory support

Assists in monitoring treatment with **systemic alkalinisation**. Hypoxia may be due to a number of the pulmonary complications seen in TCA poisoning including aspiration, cardiac and non-cardiac pulmonary oedema.

Venous Blood

Perform as part of routine workup; need to exclude multidrug OD so paracetamol & salicylate levels are mandatory

Hypoglycaemia is not a feature, but must be ruled out in any patient with a reduced level of consciousness

TCA levels cannot be assayed in a clinically useful time

TREATMENT - SUPPORTIVE

A Is the airway patent? Deteriorating levels of consciousness will likely mandate ventilatory support

Perform basic airway manoeuvres (head tilt/chin lift/jaw thrust) and **get help!**

Use airway adjunct if necessary

- Oropharyngeal airways (Guedel airway) can be attempted but are generally not tolerated unless patient is very obtunded
- Nasopharyngeal airways are often better tolerated in semi-conscious patients but even expert insertion may cause epistaxis and worsen airway

B Assess for adequacy of ventilation, rule out pulmonary aspiration and perform **arterial blood gas (ABG)**

C All patients should have **continuous ECG monitoring** for at least 6 hours after ingestion

Correct hypotension with intravenous fluid

After cardiac arrest, prolonged resuscitation may be successful and should be continued for at least 1 hour

GI Decontamination

Due to rapid absorption, only relevant if presentation within 1 - 2 hours of ingestion. Use **activated charcoal**

Most patients with massive ingestions will be unconscious or have a deteriorating level of consciousness by 2 hours and should be intubated. If the patient is unconscious and requires intubation to protect the airway insert an orogastric tube, aspirate stomach contents then give activated charcoal.

TREATMENT - SPECIFIC

**** Alkalinisation with sodium bicarbonate ****

After supportive measures, this is the **key intervention.....but by this point ITU should be involved!**

Triple benefit - **reduction in free drug concentration**, correction of acidosis with beneficial haemodynamic effects, and probably Na⁺ loading with membrane-stabilising effect

Alkalinisation will result in increased CO₂ production, so adequate ventilation is required

Sodium bicarbonate (NaHCO₃)

Use 8.4% solution (MiniJet on cardiac arrest trolley)

Dose given in most sources is (annoyingly) in mEq (milliequivalents)/kg

But happily, 1 ml of 8.4% solution = 1mEq of NaHCO₃, so

DOSE (initial): 1 mEq/kg or 1ml/kg of 8.4% solution

Can repeat bolus if required (total: 1 - 3 ml/kg)

Aim for a pH of 7.50 - 7.55

The initial treatment in critically ill patients is often titrated against clinical response with bolus injections of 1-3 mEq of sodium bicarbonate per kg body weight repeated at 3-5 minute intervals. When the clinical situation allows it, arterial blood pH should be checked. The target pH is 7.50 - 7.55, sustained elevations of pH greater than this are associated with impaired oxygen dissociation from hemoglobin. As the patient is usually ventilated the pH can be maintained with mild hyperventilation (pCO₂ = 30 mmHg).

Seizures

- Treated with **diazepam** (0.15 mg/kg, repeated) or **lorazepam** (4mg) IV initially
- **** Avoid phenytoin **** - it is a Na⁺ channel blocker and may aggravate TCA overdose
- Follow with **phenobarbitone** 15-18 mg/kg IV
- Refractory seizures >> GA

Seizures will worsen acidosis thereby increasing free TCA concentrations, so prompt treatment is essential

Anticholinergic delirium

- Mild: **reassurance** +/- benzodiazepines
- Severe: generally requires large doses of **benzodiazepines**; neuroleptics should be avoided

Arrhythmias

- Can be difficult to differentiate
- Correction of hypoxia - administer O₂
- Correction of acidosis (see later)
Antiarrhythmic agents should be avoided unless arrhythmias are unresponsive to the aforementioned measures - **get expert advice**