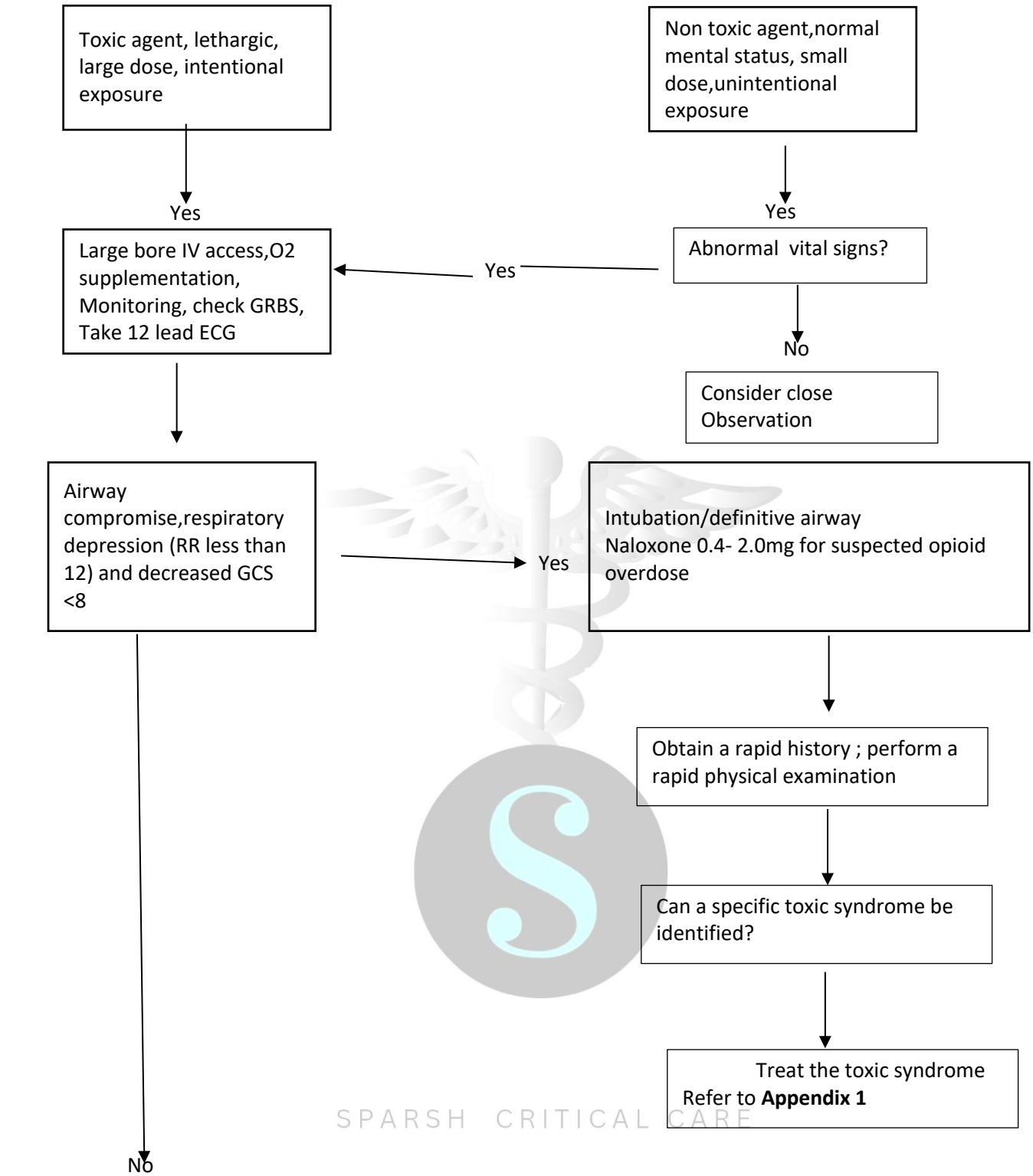
POISONING TO OP POISONING

Provisional diagnosis	
Duration of previous hospitalization (if any)	
Previous lab investigations if any	

CO-MORBIDS	☐**Hypertension**	☐**AF**	☐**COPD**
	☐**Type 2 Diabetes Mellitus**	☐**Anticoagulation**	☐**CLD**
	☐**CAD**	☐**CKD**	☐**Recent Surgery**



Hypotension?

Yes

IV Fluid boluses
Vasopressors :
Noradrenaline : 0.05 – 0.5 mcg/kg/min
Adrenaline : 0.01-0.5 mcg/kg/min
If B-Blocker or Calcium channel toxicity, use specific antidote :
Inj.Glucagon : 3-10 mg bolus, if clinical response, start iv infusion 3-5 mg/hr
Inj.Calcium Gluconate 0.6-1.2 ml/kg/hr
Inj.Insulin/Dextrose infusion : High dose insulin 1 unit/kg bolus, then 0.5 unit/kg iv infusion along with dextrose infusion targeting GRBS 140-180 mg/dl

No

Seizures/ status epilepticus

Yes

25% Dextrose for hypoglycemia
Inj.Lorazepam/ Inj.Midazolam 0.1 mg/kg
Inj. Levetiracetam 60mg/kg loading dose
Or
Inj.Phenytoin 20mg/kg loading dose as slow iv infusion
Or
Inj. Valproate 40 mg/kg as the loading dose

No

Coma or persistent alterd mental status

Yes

Head CT scan
25% Dextrose if hypoglycemia

Reassess and complete physical examination
Send bloods : CBP,RFT, ABG, Serum osmolality and check osmolol gap (if >10,toxic alcoholic intake is possibility
Send serum acetaminophen level and Urine for toxicological screening

Consider gastric lavage unless contraindicated (e.g., corrosive ingestion)

Consider prevention of absorption with activated charcoal 50 to 100 g

Evaluate for enhanced elimination
1) Multiple-dose activated charcoal
2)Urinary Alkalinization
3) Extracorporeal removal (e.g., dialysis, charcoal hemoperfusion)

Appendix 1

Toxidromes	*Mental status*	*Pupils*	*Vitals*	*Other manifestations*	*Examples of toxic agents*
Sympathomimetic	Hyper alert, agitation, hallucination, paranoia	Mydriasis	Hyperthermia, tachycardia, hypertension, widened pulse pressure	Diaphoresis, tremors, hyperreflexia, seizures	Cocaine, amphetamines, ephedrine, theophylline, caffeine
Anticholinergic	Agitation, hallucinations, delirium, coma	Mydriasis	Hyperthermia, tachycardia, hypertension, tachypnea	Dry flush skin, dry mucous membranes, decreased bowel sounds, urinary retention, myoclonus	Antihistamines, TCA, antiparkinsonism agents, atropine, antispasmodics
Hallucinogenic	Hallucinations, perceptual distortions, depersonalization, agitation	Mydriasis (usually)	Hyperthermia, tachycardia, hypertension, tachypnea	Nystagmus	Phencyclidine, MDMA, MDEA
Opioid	CNS depression, coma	Miosis	Bradypnea, apnea	Hyporeflexia, pulmonary edema, needle marks	Heroin, morphine, methadone, diphenoxylate
Sedative-hypnotic	CNS depression, confusion, stupor, coma	Variable	Often normal; hypothermia, bradycardia, hypotension, bradypnea, apnea	Hyporeflexia	Benzodiazepines, barbiturates, alcohols, zolpidem
Cholinergic	Confusion, coma	Miosis	Bradycardia, hypertension, tachypnea, hypotension, bradypnea	Salivation, urinary and fecal incontinence, diarrhea, emesis, diaphoresis, lacrimation, GI cramps, bronchoconstriction, muscle fasciculations and weakness, seizures	Organophosphate and carbamate insecticides, nerve agents, nicotine, physostigmine, edrophonium
Serotonin syndrome	Confusion, agitation, coma	Mydriasis	Hyperthermia, tachycardia, hypertension, tachypnea	Tremors, myoclonus, hyperreflexia, clonus, diaphoresis, flushing, trismus, rigidity, diarrhea	MAOIs, SSRIs, meperidine, dextromethorphan, TCA

TCA, tricyclic antidepressant; MDMA, 3,4-methylenedioxymethamphetamine; MDEA, methylenedioxymethamphetamine; CNS, central nervous system; GI, gastrointestinal; MAOI, monoamine oxidase inhibitor; SSRI, selective serotonin reuptake inhibitor

Reference:

1. Chandran J, Krishna B. Initial Management of Poisoned Patient. Indian J Crit Care Med. 2019;23(Suppl 4):S234-S40.

OP POISONING

Recognize OP Poisoning

History of Consumption

Presentation with Cholinergic Toxidrome (SLUDGE features, fasciculations, muscle weakness, cardiac arrhythmias)

- ☐A: Airway - Assess and maintain patent airway ☐ (ETI/MV)
- ☐B: Breathing - Assess and administer oxygen if required; aim SpO 2 ≥ 95%
- ☐C: Circulation - Vascular access, blood collection,
  - Send for Blood gluose/CBC/RFT/LFT/ /PT, INR, APTT
  - Send plasma for Pseudocholinesterase levels/ RBC acetylcholinesterase levels(if available)
- ☐12 lead ECG

Specific treatment

Surface decontamination:
Remove all clothes : in case of inhalational poisoning,take victim out of accident site ; eye and skin cleaning.
Gastric lavage : Normal saline lavage within 2 hours of consumption
Activated Charcoal : 1 g/kg and repeat after 4-6 hours if presents within 2 hours of consumption

Medications
Inj. Atropine : 3-5 mg iv bolus, repeat by doubling the dose every 5 minutes till atropinazation is achieved (atropinization target is drying of respiratory secretions and not tachycardia and pupillary dilation), after desired response start 20% of total cumulative bolus dose as iv infusion (eg if 18 mg given infusion to be 3.6 mg/hour) .
-May require several days of treatment depending upon clinical response (if any intermediate syndrome)

Inj. PAM(Pralidoxime) : Given in all OP poisoning except in carbamate confirmed cases where it is not needed
Dose: initial bolus of 30 mg/kg slowly over 30 minutes, then 8 mg/kg/hr as iv infusion
-May require several days of treatment

PARACETAMOL POISONING

Paracetamol dose > 150 mg/kg or unknown dose

< 4 hours post ingestion
-Send for serum Paracetamol concentration if available, plot on nomogram
(Appendix 2) and treat if paracetamol concentration is above treatment line
- Give 1g/kg activated charcoal by mouth
- Stari Inj. N-Acetylcysteine
(protocol appendix 1)

> 4 hours post ingestion
-Stari Inj. N-Acetylcysteine
(protocol appendix 1)

-Send for serum Paracetamol concentration if available, plot on nomogram
(Appendix 2) and treat if paracetamol concentration is above treatment line
-
-

Inj, NAC (20 hour IV protocol)

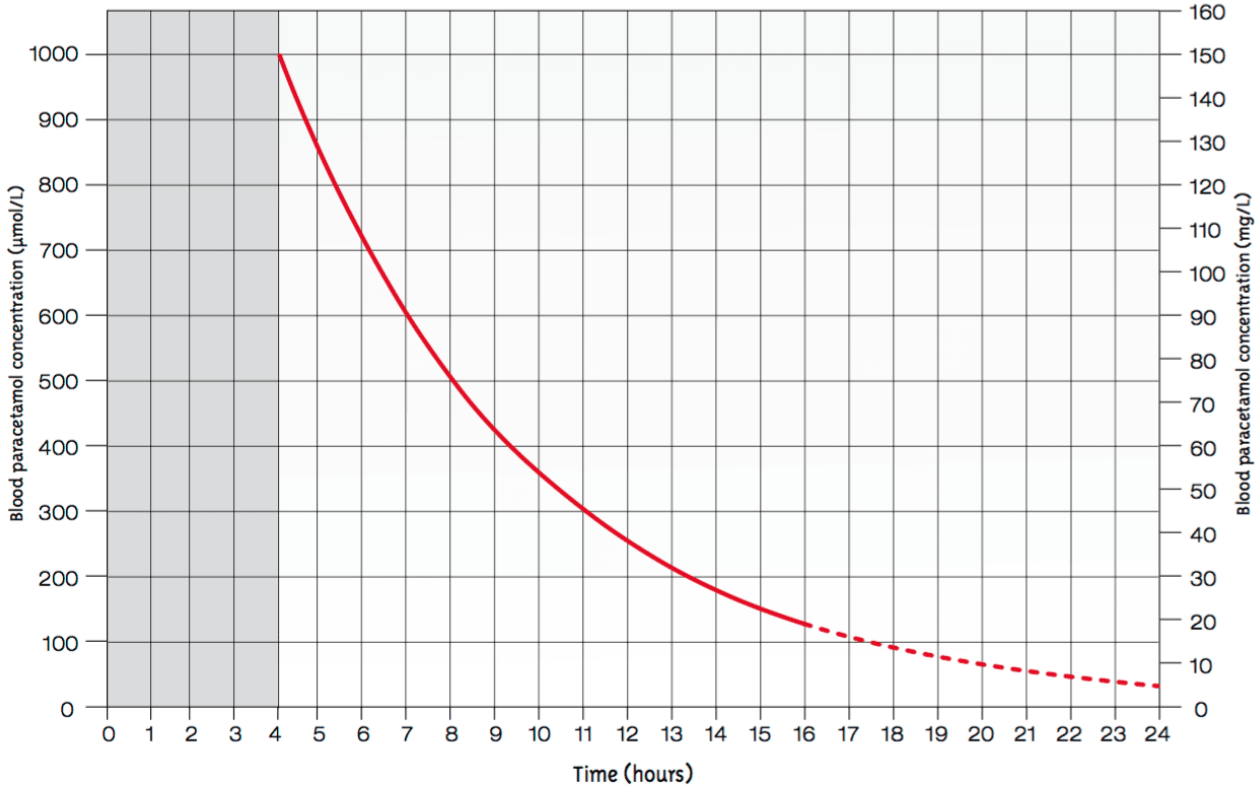
Administer an initial loading dose of 150 mg/kg IV over 15- 60 minutes.
- Next, administer a dose of 50 mg/kg over four hours (ie, infusion at 12.5 mg/kg **per hour** IV for four hours).
- Finally, administer a dose of 100 mg/kg over 16 hours (ie, infusion at 6.25 mg/kg **per hour** IV for 16 hours).

After this protocol continue Inj.NAC 6.25 mg/kg/hour iv infusion ALT(SGPT) < 50 U/L or Serum paracetamol < 10 mcg/ml

APPENDIX 1

Paracetamol Treatment Nomogram[8]

- Treat ALL patients with serum paracetamol levels above the nomogram treatment line.
- A single nomogram treatment line is recommended. This line has been lowered by 25% from standard lines to take into account:
  1. Potential for minor error estimating the of time of ingestion
  2. Increased safety for all patients with potential risk factors
- Ensure that correct units are used (ie µmol/L or mg/L)



Adapted from Rumack and Mathew
(Smilkstein et al. Ann Emerg Med 1991; 20: 1058-63)

APPENDIX 2

ICU Days	EVENTS / SUPPORTS
1	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
2	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
3	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
4	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
5	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
6	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
7	☐MV ☐RRT ☐Vasopressors ☐Organ dysfunction ☐Others
>7 days Course of illness	

Outcome

I. APACHE II/IV Score: _____ 2. SOFA Score at the time of admission:_____ , 48hr: _____ at the time of transfer out / LAMA / Discharge:_____ 3. Length of ICU Stay:_____ 4.Length of Hospital stay:____

II. Organ Failure : ☐AKI ☐Liver failure ☐Coagulopathy ☐Encephalopathy ☐Myocardial Dysfunction ☐CIPNM ☐MV dependent

III. Renal replacement therapy_____day from CRRT / SLED

IV. MV_____ duration ☐Proning ☐ECMO ☐Tracheostomy

V. Outcome: ☐Death ☐Survived (Discharged from ICU / Transfer out to stepdown / HDU/ Room) ☐LAMA

☐Ambulated ☐Bed ridden (with support / without support)

Doctor Name: _____, Sign: _____