Rapid Sequence Intubation

Objectives

- Overview of Rapid sequence induction (RSI)
- RSI Procedure
- Pretreatment agents
- Induction agents
- Paralytic medications
- Preparation is the KEY!

Preparation is the KEY

for an organized,

smooth intubation

Remember the 7 P's!!

What is “RSI” ?

- **“RSI is the near-simultaneous administration of neuromuscular blocking agents and sedative-hypnotic drugs in order to facilitate oral intubation of a patient with the least likelihood of trauma, aspiration, hypoxia and other physiologic complications.”**

Advantages of RSI

- **facilitates and expedites endotracheal intubation**
  - **increased success rate**
  - **decreased time to intubation**
- **minimizes trauma during laryngoscopy**
- **minimizes hypoxia and hypercapnia**
- **minimizes risk of aspiration**
- **minimizes hemodynamic effects of intubation**

Disadvantages of RSI

- **operator assumes complete responsibility for oxygenation, ventilation and airway patency**
- **irreversible commitment**
  - **(burnt bridges)**
- **adverse effects of medications**
- **?? increases surgical airway rate**
  - **no evidence**

RSI Procedure

- **Sample Rapid Sequence Intubation Using Etomidate and Succinylcholine: Timed Step**
- Zero minus 10 min **Preparation**
- Zero minus 5 min **Preoxygenation** 100% oxygen for 3 min *or* eight vital capacity breaths
- Zero minus 3 min **Pretreatment**
  as indicated "LOAD“
- Zero Paralysis **with induction** Etomidate, 0.3 mg/kg Succinylcholine, 1.5 mg/kg
- Zero plus 45 sec **Placement** Sellick's maneuver Laryngoscopy and intubation End-tidal carbon dioxide confirmation
- Zero plus 2 min **Post-intubation management** Midazolam 0.1 mg/kg, *plus* Pancuronium, 0.1 mg/kg, *or* Vecuronium, 0.1 mg/kg

THE 7 P's OF RSI

t – 10 minutes

PREPARATION

PREOXYGENATION

PRETREATMENT

TIME ZERO

PARALYSIS WITH INDUCTION

PROTECTION AND POSITIONING

PLACEMENT AND PROOF

t + 90 seconds

POST-INTUBATION MANAGEMENT

PREPARATION

EQUIPMENT <u>PRESENT</u> AND <u>WORKING</u>

***MUST INCLUDE EQUIPMENT**

FOR PLAN “B” & “C”

PRETREATMENT t – 3 minutes

L Lidocaine

O Opioids

A Atropine

D Defasciculating Medication

LIDOCAINE

Traditional Indications

Tight Brains

"There is currently *no evidence* to support the use of intravenous lidocaine as a pretreatment for RSI in patients with head injury and its use should only occur in clinical trials"

Robinson N, Clancy, M. Emergency Medicine Journal 18(6):453-7, 2001

Tight Lungs

"…*no study* has demonstrated a protective effect of [both intravenous and topical anesthetic agents] in preventing bronchospasm after intubation.."

Maslow et al. Anesthesiology, 93(5): 1198-1204, 2000

OPIOIDS (Fentanyl)

Traditional Indications

1. Blunt hemodynamic response
2. Decrease pain

Adachi et al. Anesthesia & Analgesia. 95(1):233-7, 2002

ATROPINE

<u>Standard practice</u>

Give atropine to:

1. all children less than 1 years old
2. prior to second dose of succinylcholine

Dose = 0.01-0.02 mg/kg IVP

PRETREATMENT t – 3 minutes

If you're going to give these drugs:

…at least give them some time to circulate (3 minutes)

THE 7 P's OF RSI

t – 10 minutes

PREPARATION

PREOXYGENATION

PRETREATMENT

TIME ZERO

PARALYSIS WITH INDUCTION

PROTECTION AND POSITIONING

PLACEMENT AND PROOF

t + 90 seconds

POST-INTUBATION MANAGEMENT

INDUCTION WITH PARALYSIS Time “0”

INDUCTION AGENTS

Etomidate

Thiopental

Ketamine

Propafol

Midazolam

+

PARALYTIC AGENTS

DEPOLARIZING

Succinylcholine

NON-DEPOLARIZING

Vecuronium
Rocuronium

The Choice of Induction Agent

ETOMIDATE – the agent of choice

PROPAFOL	– hypotension – storage, allergy concerns
KETAMINE	– not the greatest intubating conditions – some like it for asthma – good for penetrating neck trauma
MIDAZOLAM	– effective induction doses cause hypotension – usually underdosed (requires 0.3mg/kg) – better for conscious sedation

SUX IS STILL the KING

…but nondepolarizing agents are gaining ground

Perry et al. Academic Emergency Medicine 9(8): 813-23, 2002

SUX versus ROC

SUX		ROC
45 seconds	**ONSET**	1 minute
9 minutes	**DURATION**	45 minutes
*1-2.5 mg/kg		1 mg/kg

Pre-Preparation-*Este paratus*

- Work with provider/s to determine your RSI protocol
  - Determine dose's
  - Develop an RSI Kit
- Familiarize yourself with the equipment
- Practice with the Team - Mock drills
- Practice failed attempts
- Debrief/review after using

ONE SIZE FITS ALL!

PREPARATION

PREOXYGENATION WITH 100% O2 (t -5min)

PARALYSIS WITH INDUCTION (t = 0)

Etomidate 0.3 mg/kg

Succinylcholine 1.5 mg/kg **OR** Rocuronium 1mg/kg

PROTECTION AND POSITIONING

PLACEMENT AND PROOF (t +45 sec)

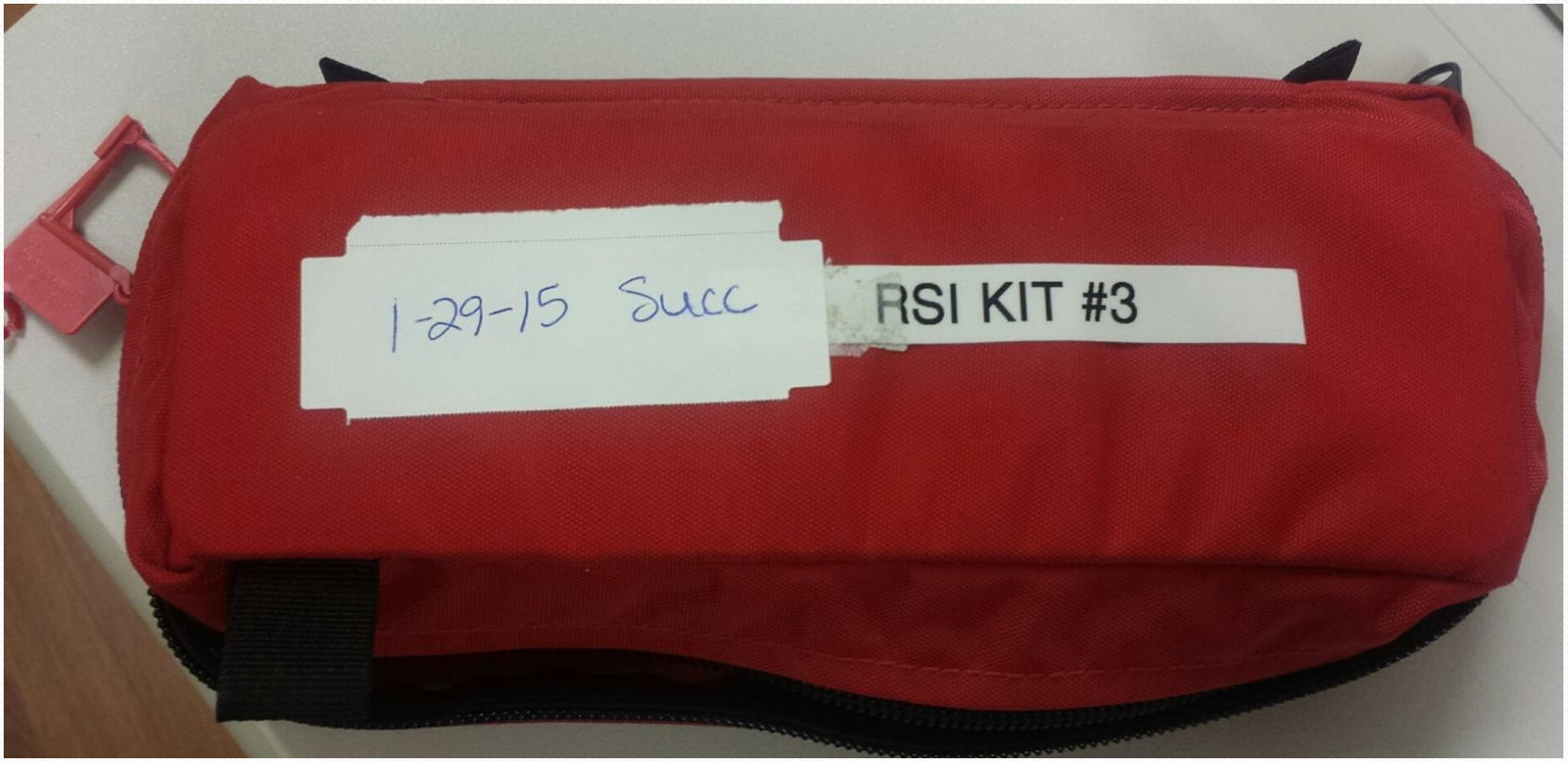
POST-INTUBATION MANAGEMENT

	Premedication			Induction Agents				Paralytic Agents		
KG	Atropine	lidocaine	Fentanyl	Etomidate	midazolam	ketamine	propofol	succs	vecuronium	rocuronium
30	0.5 mg	45 mg	90 mcg	9 mg	6 mg	45 mg	90 mg	60 mg	6 mg	30 mg
35	0.5 mg	52 mg	105 mcg	10 mg	7 mg	52 mg	105 mg	70 mg	7 mg	35 mg
40	0.5 mg	60 mg	120 mcg	12 mg	8 mg	60 mg	120 mg	80 mg	8 mg	40 mg
45	0.5 mg	68 mg	135 mg	14 mg	9 mg	68 mg	135 mg	90 mg	9 mg	45 mg
50	0.5 mg	75 mg	150 mcg	15 mg	10 mg	75 mg	150 mg	100 mg	10 mg	50 mg
55	0.5 mg	82 mg	165 mg	16 mg	11 mg	82 mg	165 mg	110 mg	11 mg	55 mg
60	0.5 mg	90 mg	180 mcg	18 mg	12 mg	90 mg	180 mg	120 mg	12 mg	60 mg
65	0.5 mg	98 mg	195 mcg	20 mg	13 mg	98 mg	195 mg`	130 mg	13 mg	65 mg
70	0.5 mg	105 mg	210 mcg	21 mg	14 mg	105 mg	210 mg	140 mg	14 mg	70 mg
75	0.5 mg	112 mg	225 mcg	22 mg	15 mg	112 mg	225 mg	150 mg	15 mg	75 mg
80	0.5 mg	120 mg	240 mcg	24 mg	16 mg	120 mg	240 mg	160 mg	16 mg	80 mg
85	0.5 mg	128 mg	255 mcg	26 mg	17 mg	128 mg	255 mg	170 mg	17 mg	85 mg
90	0.5 mg	135 mg	270 mcg	27 mg	18 mg	135 mg	270 mg	180 mg	18 mg	90 mg
95	0.5 mg	142 mg	285 mcg	28 mg	19 mg	142 mg	285 mg	190 mg	19 mg	95 mg
100	0.5 mg	150 mg	300 mcg	30 mg	20 mg	150 mg	300 mg	200 mg	20 mg	100 mg
105	0.5 mg	158 mg	315 mcg	32 mg	21 mg	158 mg	315 mg	210 mg	21 mg	105 mg
110	0.5 mg	165 mg	330 mcg	33 mg	22 mg	165 mg	330 mg	220 mg	22 mg	110 mg
115	0.5 mg	172 mg`	345 mcg	34 mg	23 mg	172 mg	345 mg	230 mg	23 mg	115 mg
120	0.5 mg	180 mg	360 mcg	36 mg	24 mg	180 mg	360 mg	240 mg	24 mg	120 mg
125	0.5 mg	188 mg	375 mg	38 mg	25 mg	188 mg	375 mg	250 mg	25 mg	125 mg
130	0.5 mg	195 mg	390 mcg	39 mg	26 mg	195 mg	390 mg	260 mg	26 mg	130 mg
135	0.5 mg	202 mg	405 mcg	40 mg	27 mg	202 mg	405 mg	270 mg	27 mg	135 mg
140	0.5 mg	210 mg	420 mcg	42 mg	28 mg	210 mg	420 mg	280 mg	28 mg	140 mg
145	0.5 mg	218 mg	435 mcg	44 mg	29 mg	218 mg	435 mg	290 mg	29 mg	145 mg
150	0.5 mg	225 mg	450 mcg	45 mg	30 mg	225 mg	450 mg	300 mg	30 mg	150 mg

OR

Amidate 2 mg/mL
Amidate 2 mg/mL

RSI Kit


1-29-15 Succ
RSI KIT #3

Rocuronium Bromide
Rocuronium Bromide
Amidate™
Etomidate Injection, USP
20 mg/10 mL
INTRAVENOUS USE ONLY
Amidate™
Etomidate Injection, USP
20 mg/10 mL
INTRAVENOUS USE ONLY
Amidate™
Etomidate Injection, USP
20 mg/10 mL
INTRAVENOUS USE ONLY
NDC 42023-138-10
Ketamine HCl
Injection, USP
500 mg/10 mL
(50 mg/mL)
For Slow Intravenous or Intramuscular Use
10 mL Multiple Dose Vial
SUCCINYLCHOLINE
CHLORIDE INJECTION, USP
200 mg (20 mg/mL)
Health Care
Logistics
800-848-1633
0506159

35 Y.O. Male, 75 kg, with TBI GCS 7

PREPARATION

PREOXYGENATION WITH 100% O2 (t -5min)

PRETREATMENT (t -3min)

Lidocaine 1.5 mg/kg IVP (Optional - if time allows)

Vecuronium 0.01 mg/kg IVP (Optional - if time / resp status allows)

Fentanyl 3 µg/kg IVP (Optional - if time / BP allows)

PARALYSIS WITH INDUCTION (t = 0)

Etomidate 20 mg

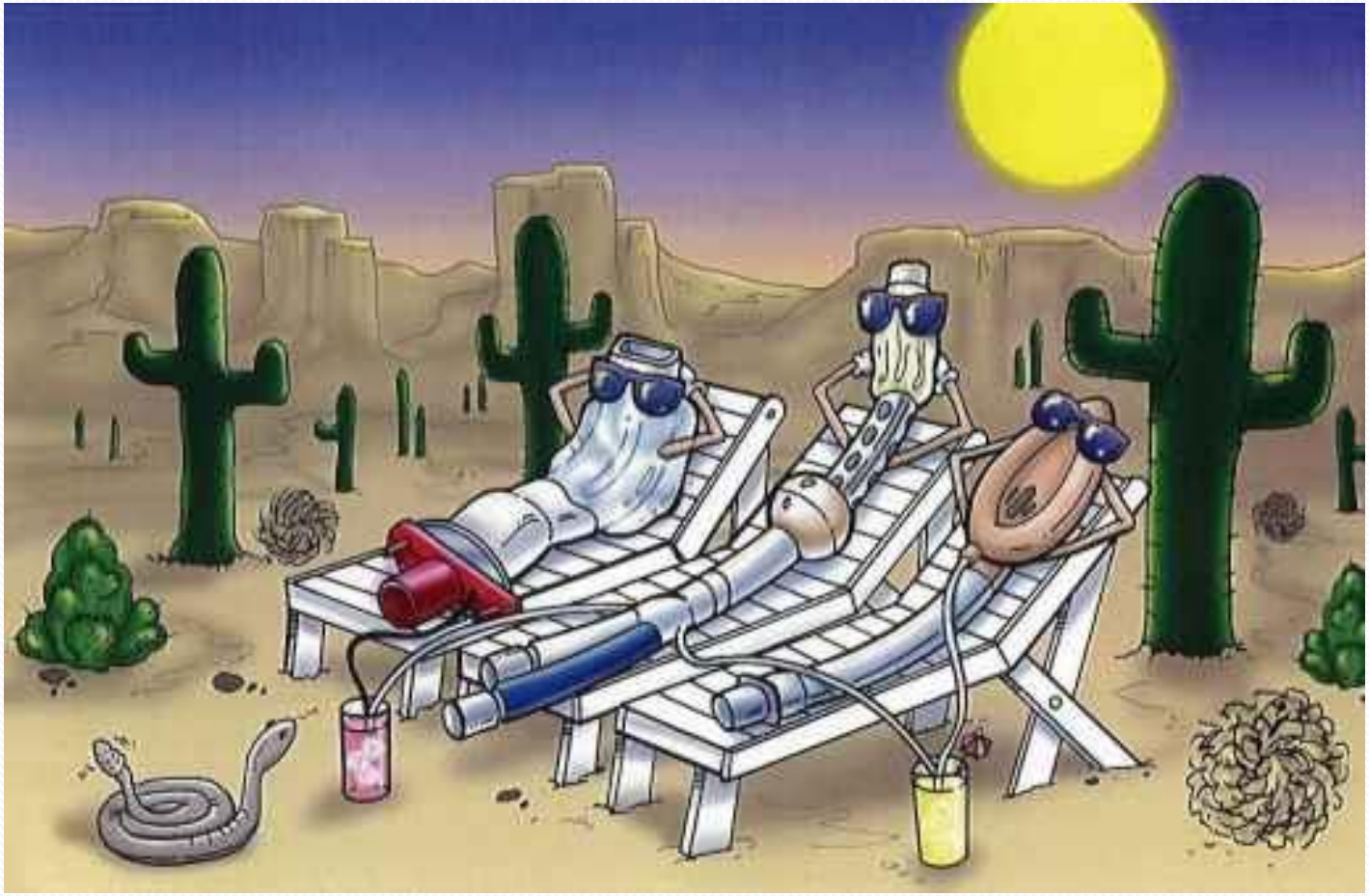
Succinylcholine 120 mg OR Rocuronium 75 mg

PROTECTION AND POSITIONING (BURP and C-spine protection)

PLACEMENT AND PROOF (t +45 sec)

POST-INTUBATION MANAGEMENT

Know Your Back-up Plans!!!



IF

Endotracheal Intubation fails, you must have a back-up plan...

King-LTD

LMA

BVM

Combi-Tube

Cricothyrotomy

RSI Drugs made simple…

RSI Drugs 101 (EM in 5)

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