



ProlongedFieldCare.org Austere Anesthesia and Surgery Checklist

It is far easier to accidentally kill someone during even a short procedure with anesthesia than a scalpel during an extremity procedure. The most experienced provider should run anesthesia and stay by the patient's head until after the procedure and the patient is fully recovered from all drugs. It is recommended that the more experienced medic do the anesthesia and the other medic do the procedure.

Pre-Sedation Patient Assessment

- _____ Baseline GCS(no meds) or RASS(If meds on board)
- _____ Blood Pressure
- _____ Heart Rate
- _____ Shock Index=(HR÷SP) [Normal=.5 - .7]
- _____ Respiratory Rate
- _____ Allergies
- _____ Blood Type
- _____ Weight kg

Tactical Time Out

- S**-Security Situation
- O**-Operational Situation
- C**-Contingency Plans
- S**-Shift (Role) Change
- P**-Patient Status and Procedural Plan

Adequately resuscitated? **YES NO**
SICK or **NOT SICK?**
STABLE or **UNSTABLE?**
GETTING BETTER or **GETTING WORSE?**

Equipment

- M-Machine
 - Ventilator/BVM
- S-Suction Device
- M-Monitor
 - Patient Monitor
 - Stethoscope
 - BP Cuff
 - Pulse Ox
 - Capnograph
- A-Airway
 - Cric kit and checklist
 - iGel/SGA
 - RSI Equipment and checklist
- I-IV/IO
 - Fluids and lines hooked up
- D-Drugs and doses calculated, drawn and labeled
 - Consider regional anesthesia block for analgesia
 - Ondansetron 4-8mg as antiemetic
 - Midazolam 1-4mg for sedation and amnesia as needed
 - Flumazenil 0.2-1mg as needed for Midazolam reversal
 - Fentanyl 25-100mcg as needed for 30-60mins of analgesia for painful stimuli
 - Narcan 0.4-2as needed for fentanyl reversal
 - Ketamine 1-2mg/kg for 10 mins of dissociation or longer duration analgesia
 - Epinephrine as needed for vasopressor 20mcg slow push as needed
 - Anaphylaxis
 - Epinephrine .3mg IM
 - Benadryl 25-50mg
 - Solumedrol 125mg vial

+4	Combative	Combative, violent, immediate danger to staff
+3	Very agitated	Pulls to remove tubes or catheters; aggressive
+2	Agitated	Frequent non purposeful movement; fights ventilator
+1	Restless	Anxious, apprehensive, movements not aggressive
0	Alert and calm	Spontaneously pays attention to caregiver
-1	Drowsy	Not fully alert but has sustained awakening to voice (eye opening and contact >10 seconds)
-2	Light sedation	Briefly awakens to voice (eyes open and contact <10 seconds)
-3	Moderate sedation	Movement of eye opening to voice (no eye contact)
-4	Deep sedation	No response to voice but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation

Procedure for RASS assessment		Score
1.	Observe patient. • Patient is alert, restless, or agitated.	0 to +4
2.	If not alert, state patient's name and tell patient to open eyes and look at speaker. • Patient awakens with sustained eye opening and eye contact. • Patient awakens with eye opening and eye contact, but not sustained. • Patient has any movement in response to voice but no eye contact.	-1 -2 -3
3.	When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum. • Patient has any movement to physical stimulation. • Patient has no response to any stimulation.	-4 -5

Ketamine drip (for sedation): Sedation loading dose first (1mg/kg IV/IO over 60 seconds).
MIX: 750mg (1.5 vials of 500mg/5mL) in 250mL of normal saline (3mg/mL solution).

Initial drip dose:

- **Best:** Using an IV pump, set to µg/kg/min dose desired. Increase or decrease dose by 5-10µg/kg/min increments.
 - **Better:** Using a dial flow adaptor, initial drip rate in mL/h equals the casualty's weight in kg divided by 2 (see mL/h table).
 - **Minimum:** Count drip rate. Increase or decrease rate by 1-2 drips/min (very slowly) to achieve goal.
- Drip adjustments:** Increase or decrease drip by 0.25mg/kg/h (1 row).

Ketamine Drip Dosing Tables						
Ketamine drip rate for dial flow or IV pump (starting dose highlighted)						
Dose		Patient's Weight, kg				
		40	60	80	100	
mg/kg/h	µg/kg/min	Infusion Rate, mL/h				
0.5	8	7*	10	13	17	
0.75	13	10	15	20	25	
1.0	17	13	20	27	33	
1.25	21	17	25	34	42	
1.5	25	20	30	40	50	
1.75	29	24	35	47	59	
2.0	33	27	40	53	67	

Ketamine drip count for 15 drips/mL tubing (starting dose highlighted)						
Dose		Infusion Rate, 1 drip/X seconds				
		1/35	1/24	1/18	1/9	
0.5	8	1/35	1/24	1/18	1/9	
0.75	13	1/27	1/18	1/14	1/8	
1.0	17	1/18	1/12	1/9	1/7	
1.25	21	1/15	1/10	1/8	1/6	
1.5	25	1/12	1/8	1/6	1/5	
1.75	29	1/11	1/7	1/6	1/5	
2.0	33	1/9	1/6	1/5	1/4	

Ketamine drip count for 10 drips/mL tubing (starting dose highlighted)						
Dose		Infusion Rate, 1 drip/X seconds				
		1/53	1/36	1/27	1/14	
0.5	8	1/53	1/36	1/27	1/14	
0.75	13	1/41	1/27	1/21	1/12	
1.0	17	1/27	1/18	1/14	1/11	
1.25	21	1/23	1/15	1/12	1/9	
1.5	25	1/18	1/12	1/9	1/8	
1.75	29	1/17	1/11	1/9	1/8	
2.0	33	1/14	1/9	1/8	1/6	

Procedural Sedation

- Step 1:** Bolus (1.0-2.0mg/kg) 80-160mg ketamine IV/IO over 60 seconds (250-400mg IM if necessary).
- Step 2:** Consider adding (start low, give more):
- 25-100µg fentanyl IV/IO
 - 1-4mg midazolam IV/IO
- Step 3:** May need to repeat doses as below if procedure lasts longer than 10-15 minutes.
- Ketamine every 10-15 minutes
 - Fentanyl every 15-30 minutes
 - Midazolam every 30-60 minutes

*dial flow adaptor not accurate for rate < 10mL/h; use drip count

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The risks and benefits of doing or not doing a procedure must be discussed with the team

Is the juice worth the squeeze?

- What happens if you do it and the patient dies?
- What happens if you do nothing and they die?
- Can you transfer to another host-nation, Ally or NGO facility?

Goals of emergency war wound surgical procedures:

1. **Stop Bleeding**
2. **Relieve tension**
3. **Remove or reduce contaminants including dead tissue and reduce bacterial load**
 - a. **Restore perfusion or function**

Other things that can make a difference and buy time before surgery

(Things we have learned since the Civil War):

- Early systemic antimicrobials
 - Early Antibiotics
 - Tetanus prophylaxis
 - Invasive Fungal Prophylaxis (Dakins)
- Disruption of superficial biofilm on old wounds by scrubbing with antimicrobial such as
 - Chlorhexidine
 - Iodine surgical scrub
 - Antibacterial soap
 - dakin's solution (1L water + 0.5ml unscented household bleach) for suspected fungal infection
- Copious irrigation with potable water
- Bacteriostatic dressings such as silverlon, sugar, honey...
- Promoting natural drainage NO occlusive dressings
- Sterility and aseptic technique

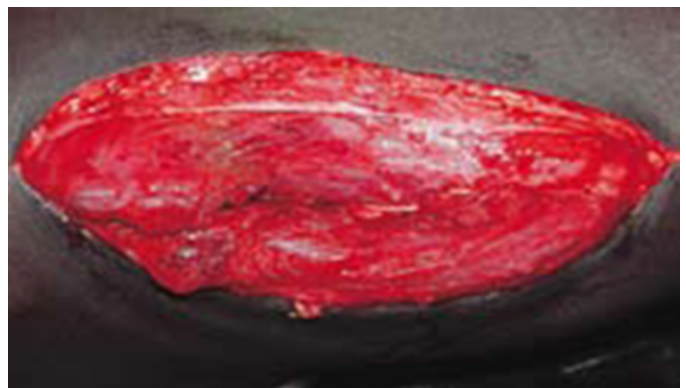
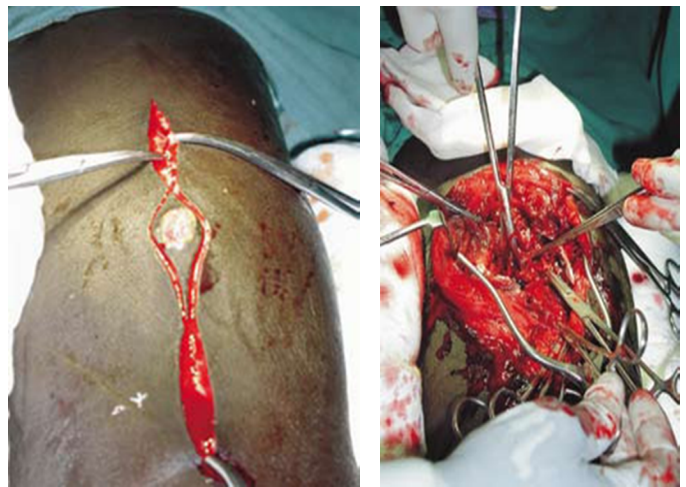
Step by Step Surgical Prep

- Telemedical Consult?
- Room Prepped
 - Clean
 - Secure
- Drug Calculations and Syringes
- Procedure and [Anesthesia Cheatsheets](#)
- Patient
 - Resuscitated and Stable?
 - Mental status, BP, HR, RR, SI, Lactate, INR, HCT
 - NPO or decompressed?
 - Additional Blood anticipated?
- Instruments Disinfected and Sterile
 - Scalpel w/ 10 blade
 - Forceps/Clamps
 - Tissue forceps nice to have
 - Needle Drivers nice to have
 - Gigli Saw wire
 - Gigli handles nice to have
 - Scissors
 - Metzenbaums or Mayos nice to have
 - Sterile Drapes Recommended

Autoclave - Lobster Pot

Instant Pot - 20 mins on high(15 psi setting)

Stove top Pressure cooker



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Dry Heat (Oven, Toaster Oven, grill)

- 180°C (356°F) for 30 mins
- 170°C (338°F) for 1 hour1
- 160°C (320°F) for 2 hours

Glutaraldehyde, Cidex 5 mins then rinse

Alcohol:

- 60% to 90% minimum
- 3 hours of contact time
- Consumable alcohol must be a minimum of 120 proof

Bleach: Undiluted (5.25%) sodium hypochlorite **NO MORE THAN 5 mins then rinse off**

Boiling: 20 mins at a low rolling boil

7 mins in the microwave with a small cup of water on the side (NO METAL!)

- Gather Other Surgical Equipment
 - Sterile Gloves
 - Gown
 - mask
 - Suture
 - Chlorhexidine
 - Iodine

Prep and Drape

- Gross decontamination of entire limb with chlorhexidine scrub
- Irrigate and Dry
- Don hat and mask
- Open outer layer of sterile pack, gown and gloves
- Apply tourniquet at this time if needed
- Scrub in and Don gown and gloves
- Open sterile packs and create sterile working space
- Paint everything with Povidone Iodine
- Drape affected area with sterile drapes
 - Air-tight/Waterproof plastic layer
 - Large outer working surface

PROCEDURAL TIME OUT BEFORE CUTTING

- Procedure,
 - Plan
 - Roles
 - Special considerations
 - Questions
- Incise skin and elongate wound edges with scalpel
- Assess and remove dead tissue with scissors
 - Color
 - Consistency
 - Contractility
 - Capillary bleeding
- Ligate vessels
- Distract and cut nerves (amputation only)
- Cut/remove bone
- Fasciotomies
- Remove tourniquets(**NOTIFY ANESTHETIST FIRST**)and check bleeding
- Irrigate with potable water
- Dry (**Count in and out**)
- Dress the wound/stump
- Bulky sterile non-occlusive dressings and/or drains to allow for exudate drainage

Ensure your interventions worked

- ALL bleeding controlled once tourniquets removed
- No tense compartments
- All contaminants and non-viable tissues removed and irrigated
- Check Pulse, Motor, Sensory of affected limb!

