



BENZODIAZEPINE RESISTANT STATUS EPILEPTICUS

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WHAT NEEDS TO WORK TO BE “CONSCIOUS”?



WHAT IF NO PART OF THE BRAIN IS WORKING? DROPERIDOL DRIVEN CONSCIOUSNESS?



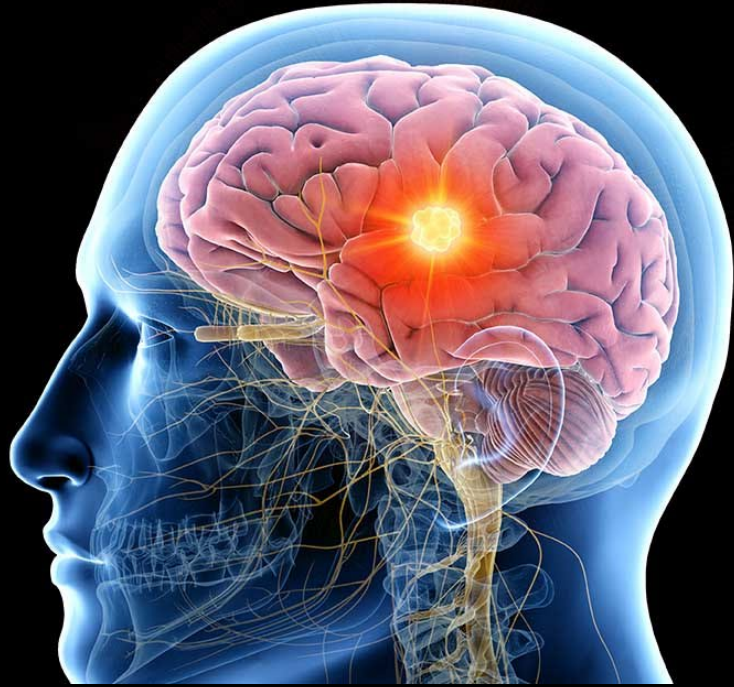
SEIZURE

AND

STATUS
EPILEPTICUS



FOCAL VS GENERALIZED SEIZURES



SEIZURE MIMICS



Cardiac Arrest



Fainting Spells
(Syncope)

ECLAMPSIA

- More likely in first pregnancy and extremes of age
- Associated with preeclampsia and high blood pressure
- Can occur near end of pregnancy and even after delivery
- Cerebral vasoconstriction and blood brain barrier compromise
- Magnesium is mainstay treatment

MAGNESIUM



CLINICAL PEARL: LATERAL TONGUE BITING

- Occurs in approx. 30% of Seizures but is Highly Specific for Seizure especially if **LATERAL** Tongue



- Lifetime Risk of Status Epilepticus up to 15% in Seizure Patients
- Death rate from prolonged Status approximates 33% in adults
- Some Status cases are Refractory to Benzodiazepines
- EMS carries limited medication armamentarium

THE PROBLEM



STATUS EPILEPTICUS

- How do Benzos and Most Seizure Medications Stop Seizures?
 - Midazolam **GABA**
 - Lorazepam: **GABA**
 - Diazepam: **GABA**
 - Phenobarbital: **GABA**
 - Valproic Acid: **GABA**
 - Thiopental: **GABA**
- What can we do if Benzo's Fail??



SCHEPPKE'S PERSONAL BIAS

KETAMINE



**KETAMINE FOR
EVERYTHING**

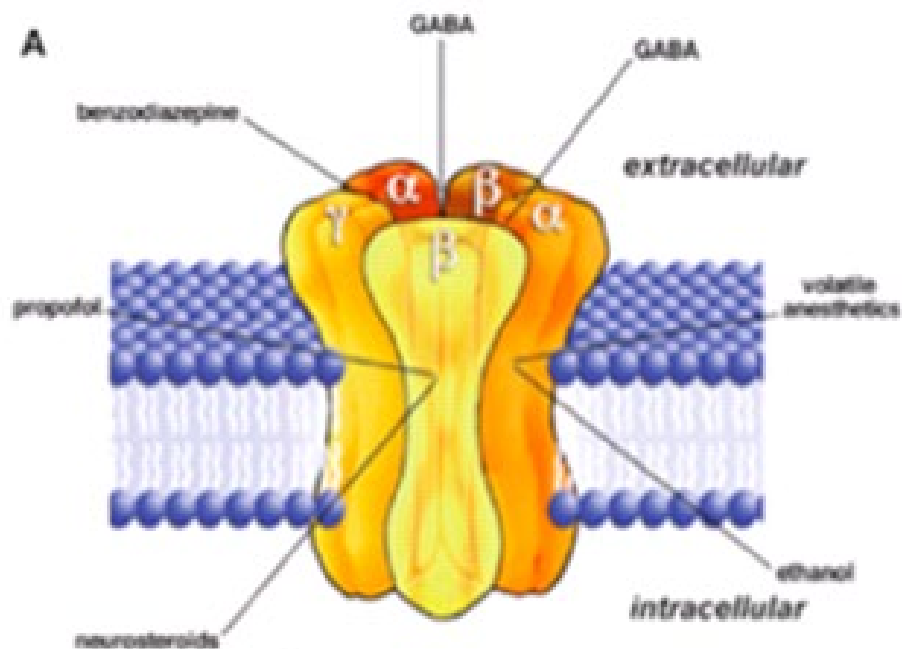
EMS Already Carries Ketamine

- Sedative (Dissociative Anesthesia)
- Pain Relief
- Amnesia
- Bronchodilator
- **Anti Seizure**

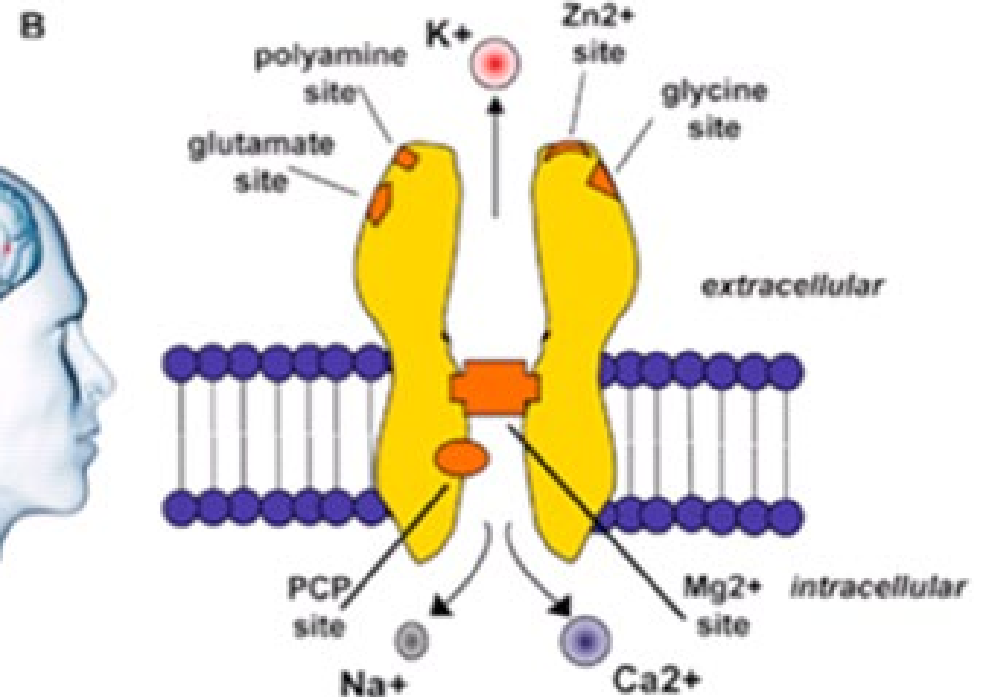


KETAMINE POSTULATED MECHANISM OF ACTION IN STATUS EPILEPTICUS

GABA_A Receptors *(inhibiting brain cell firing)*



NMDA Receptors *(causing brain cell firing)*



KETAMINE PROTOCOL

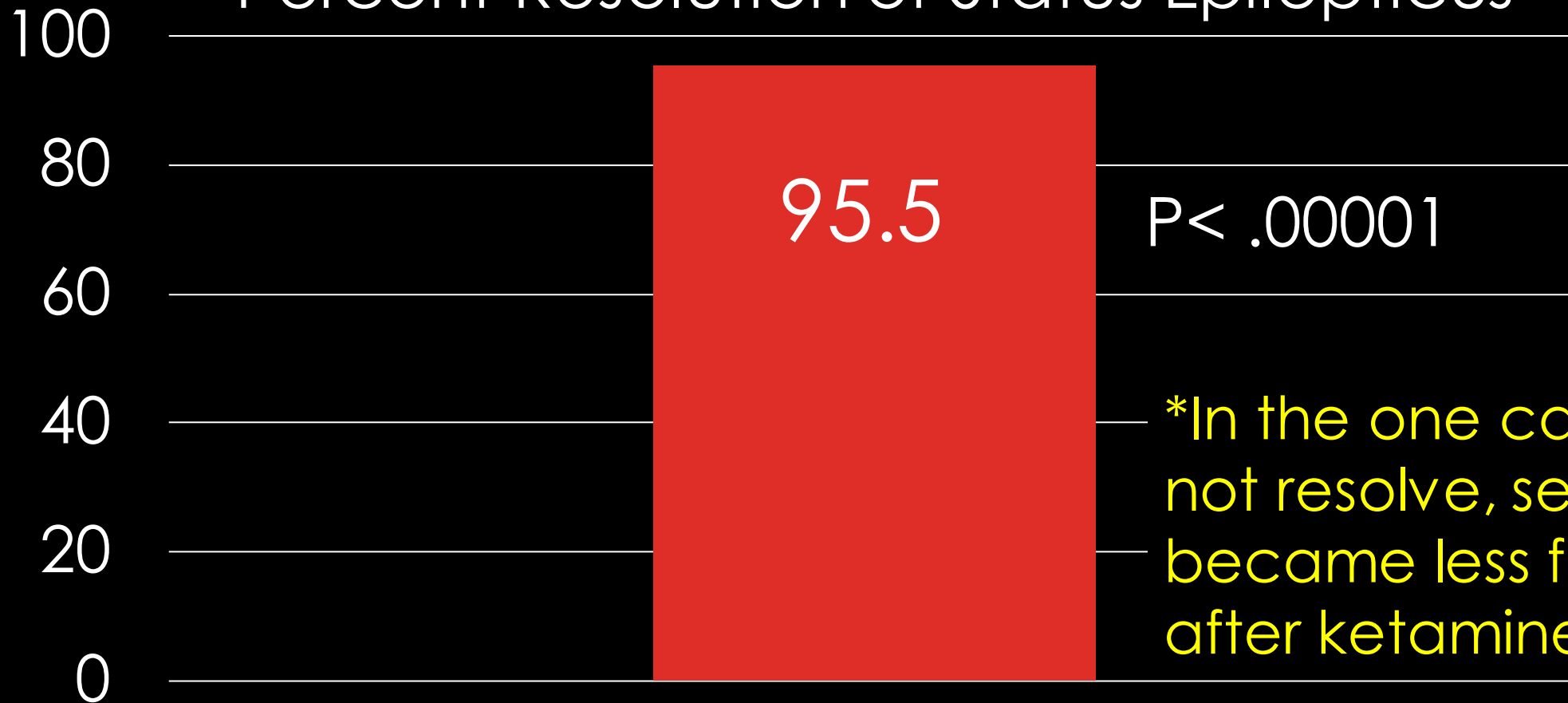
- EMS Captain Approval Required
- 100mg of Ketamine IV/IO in adults (1mg/kg in children)
 - Or
- 3 mg/kg IM (adults and children)



PILOT DATA:

21 / 22* CASES RESOLVED AFTER KETAMINE

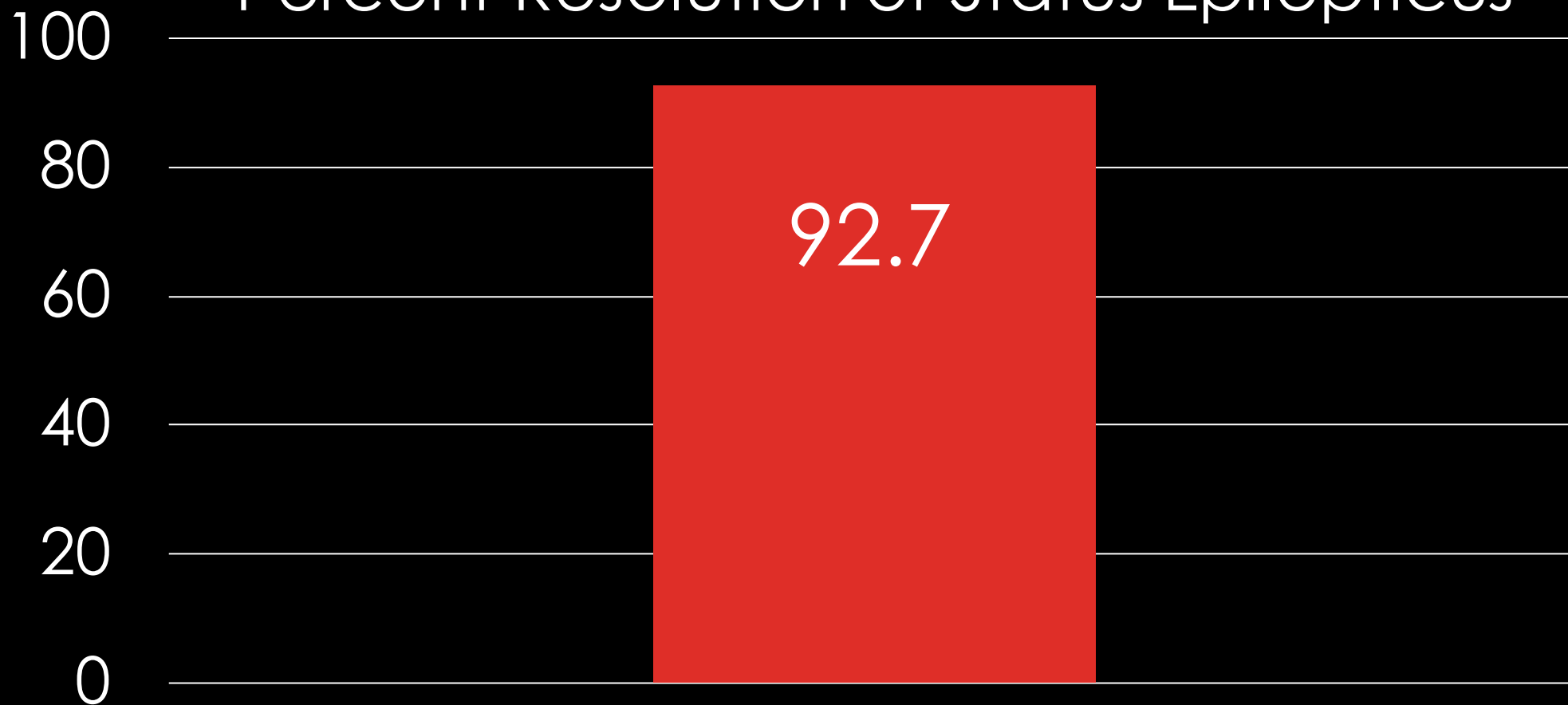
Percent Resolution of Status Epilepticus



*In the one case that did not resolve, seizures became less frequent after ketamine

LONGER TERM EXPERIENCE: 82 TOTAL CASES: 76 RESOLVED

Percent Resolution of Status Epilepticus



TAKE HOME PEARLS

- Tongue bite and prolonged confusion suggest seizure in altered LOC patients
- Status Epilepticus is a time sensitive life-threatening condition
- **Benzodiazepines are first line** therapy for seizure
- Ketamine is a promising agent (over 90% success) for benzodiazepine resistant Status Epilepticus

Thank You!!

