



It's a No Brainer

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Conflicts of Interest

- I have no financial interest in Covidien, the manufacturer of the BIS monitor.
- Covidien has provided the monitors for this trial.



The Problem

**We don't know when
dead guys are dead
anymore.**





Mr. Franco was fortunate to have an external expression of his brain activity. The vast majority of patients do not have that advantage.



- 62 YO female, witnessed V. fib arrest
- V. fib refractory to tx
- LUCAS/ITD, trying to sit up and look around under
- RSI, 30 min on scene 20 min transfer time
- At hospital, pt flaccid
- ED declares her dead



**But, what if she wasn't as
dead as she looked?**



**What if we could know
the condition of her brain?**



BIS

Bispectral Index Monitoring





How does it work?

- Poor man's EEG
- The BIS system processes the EEG information and calculates a number between 0 and 100 that provides a direct measure of the patient's level of consciousness. A monitoring value of 100 indicates the patient is fully awake and a value of 0 indicates the absence of brain activity.



BIS: Current Uses

- OR
- Lab
- Lots of literature verifying its use
- Conflicting literature in cardiac arrest
- No human trials with LUCAS/ITD
- We are very early in our trial (11 pts)

Date	Time	AVGBIS	EtCO2	Event
10/22/2014	8:58			Pt Collapse, Immediate manual CPR
10/22/2014	9:05			EMS on scene, 10 seconds of ROSC
10/22/2014	9:08			AED Shock
10/22/2014	9:10			AED Shock
10/22/2014	9:12		9	
10/22/2014	9:15			AED Shock
10/22/2014	09:17:00	87.0	11	
10/22/2014	09:18:00	86.0		
10/22/2014	09:19:00	79.0		
10/22/2014	9:20		11	
10/22/2014	9:22		9	
10/22/2014	9:23			AED Shock
10/22/2014	9:27		18	
10/22/2014	9:30		18	
10/22/2014	9:32			AED Shock
10/22/2014	9:35		63	50 MEQ Sodium Bicarb
10/22/2014	9:39			AED Shock
10/22/2014	9:40		55	
10/22/2014	9:42		43	
10/22/2014	09:44:00	44.0		
10/22/2014	09:45:00	44.0	43	
10/22/2014	09:46:00	50.0		
10/22/2014	09:47:00	47.0		
10/22/2014	09:48:00	51.0		50 MEQ Sodium Bicarb
10/22/2014	09:49:00	46.0		
10/22/2014	09:50:00	47.0	41	
10/22/2014	09:51:00	47.0		
10/22/2014	09:52:00	49.0		AED Shock
10/22/2014	09:53:00	46.0	39	
10/22/2014	09:54:00	43.0		
10/22/2014	09:55:00	54.0	41	
10/22/2014	09:56:00	39.0		
10/22/2014	09:57:00	40.0		
10/22/2014	09:58:00	42.0		
10/22/2014	09:59:00	41.0		
10/22/2014	10:00:00	40.0		
10/22/2014	10:01:00	47.0		
10/22/2014	10:02			Pt arrive at ED
10/22/2014	10:03			CPR Terminated



Twin Cities Experience with LUCAS/ITD in cath lab

- 12 cases have been taken to cath lab (U of M), CPR times 1-11/2 hour range
- 50% of those have a favorable neurological outcome
- Next year we will begin randomizing refractory v. fib pts in an RCT



Bottom Line:

We need to know when a dead guy is dead and when a guy we think is dead, isn't. BIS might be one way of doing it, taken alone or with other parameters. We'll see.



**In the future with the advent of
LUCAS/ITD and easily applied
ECMO/LVAD, we may not care
about the condition of the
heart, only the brain.**



Questions?