Psychology & Human Factors in Emergency Airway Management

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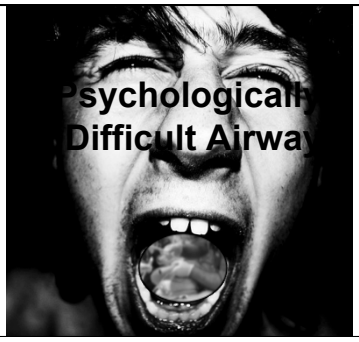
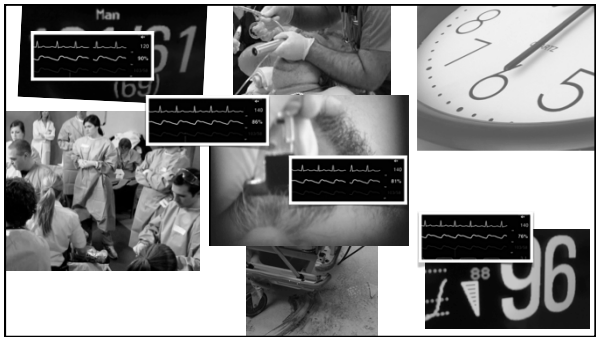
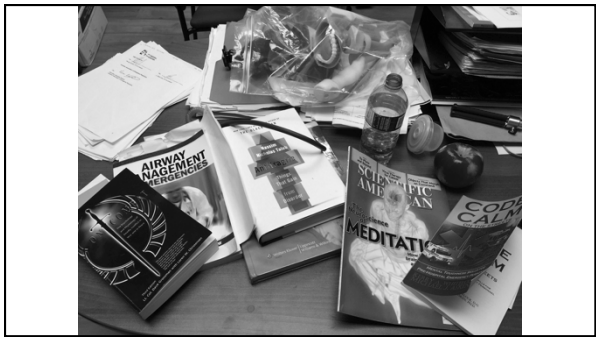
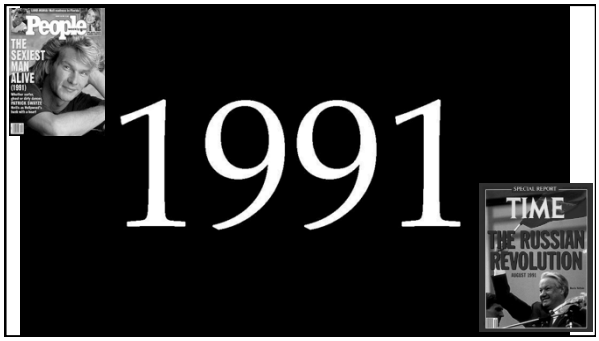
Plan:

- Success/Failure
- Human Factors
- Bias
- Stress
- Taking Control
- Not a CRM talk

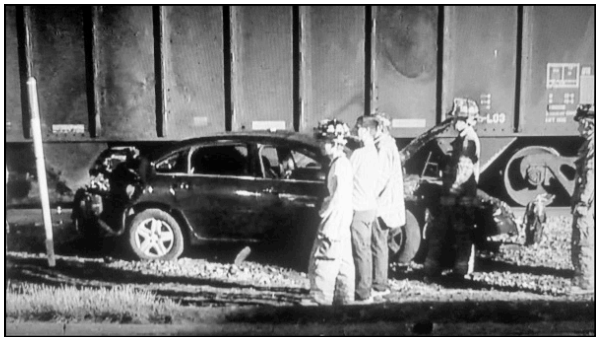




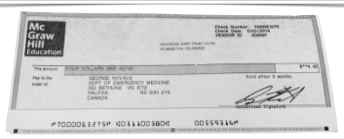

AIRWAY
NAGEMENT
MERGENCIES
MEDITATIO


People
THE SEXIEST MAN ALIVE
1991
TIME
THE RUSSIAN REVOLUTION

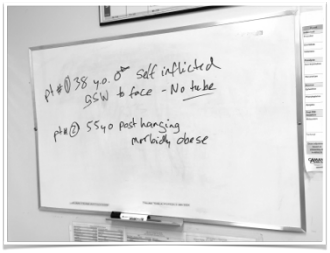

Admitting
Emergency
Outpatients

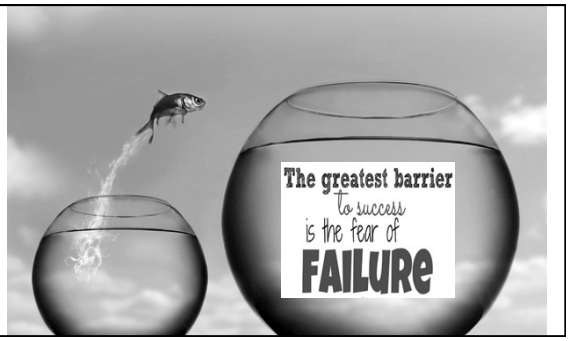


AIME
For Airway Success
Airway Interventions & Management in Emergencies

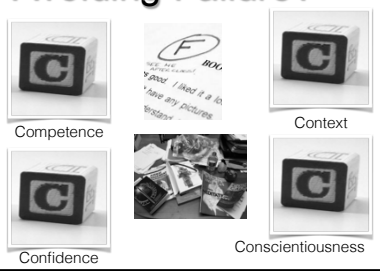


Case: 5 min warning

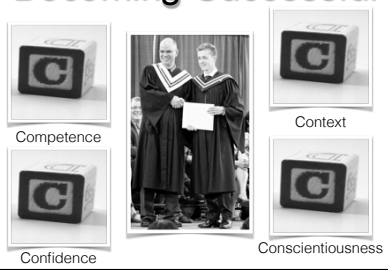




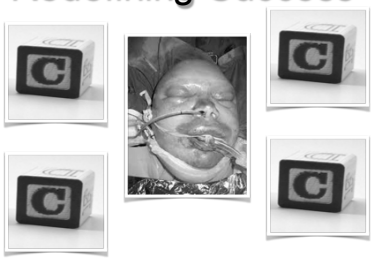
Avoiding Failure?



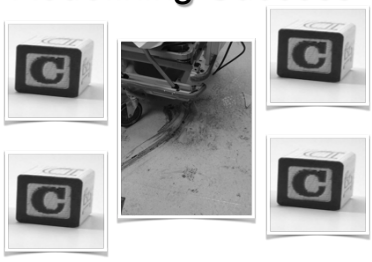
Becoming Successful



Redefining Success



Redefining Success



Redefining Success
(1) Outcome Bias

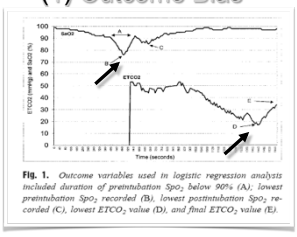
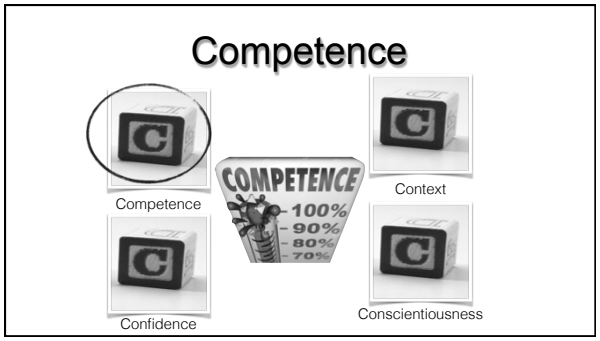


Fig. 1. *Outcome variables used in logistic regression analysis included duration of preintubation Spo_2 below 90% (A); lowest preintubation Spo_2 recorded (B), lowest postintubation Spo_2 recorded (C), lowest $ETCO_2$ value (D), and final $ETCO_2$ value (E).*

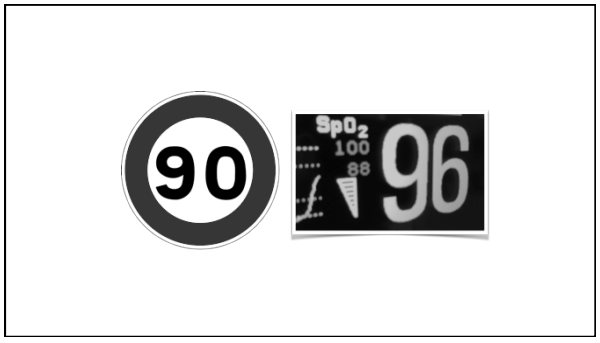
Davis et al, A Follow up Analysis of Factors Associated with Head Injury Mortality After Paramedic Rapid Sequence Intubation. J Trauma. 2005;59:484-488

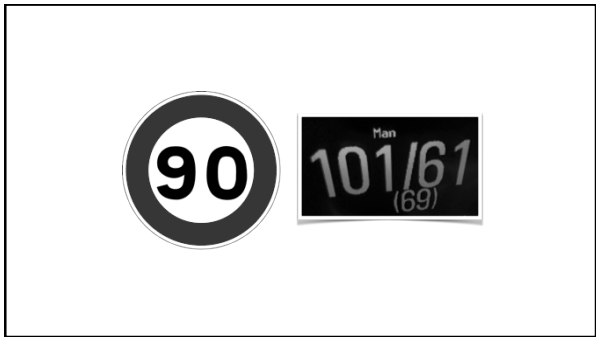

Competence
Competence
COMPETENCE
100%
90%
80%
70%
Context
Confidence
Conscientiousness

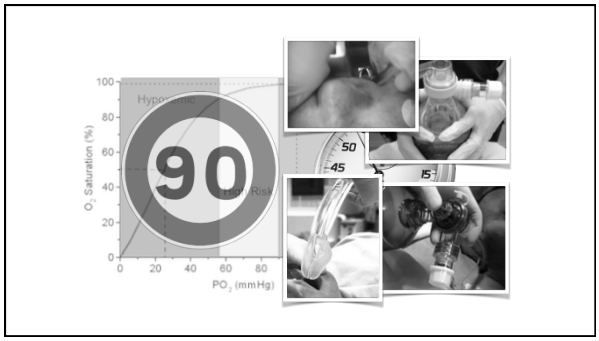

Competent Emergency Airway Management
90


Man
101/61
(69)
SpO2
100
88
96
90
HR
130
50
79


First Pass Success
80 or 85
maybe 90
but don't go 100!


90
SpO2
100
88
96

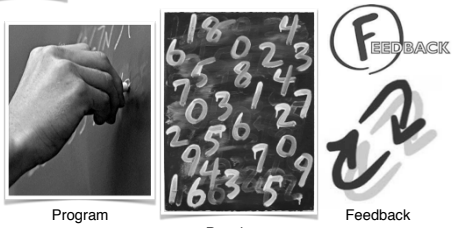

90
Man
101/61
(69)



Success…

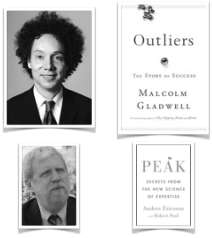
- 90 % FPS
- >90 % sat
- >90 mm Hg
- <90 sec

Competence/Performance



Program | Practice | Feedback

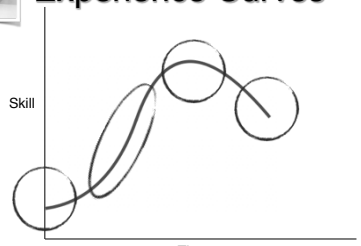
How Much Practice



"The greats weren't great cause at birth they could paint. The greats were great cause they painted a lot."

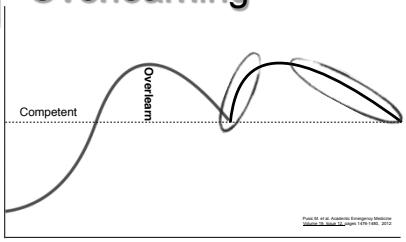
Practice- How often?

Experience Curves



Pusic et al. Academic Emergency Medicine. 2012

Overlearning



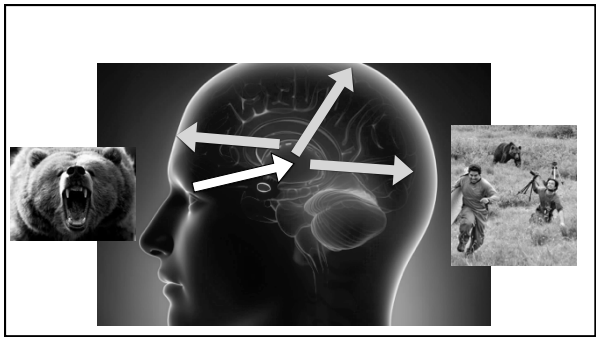
Context: Environment

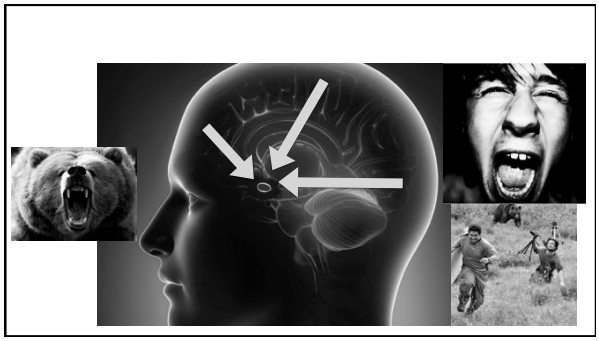
Context: External Environment

- Culture
- Location

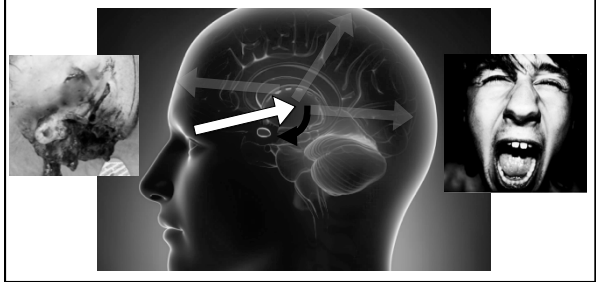
(2) Generalizability Bias

Context: Internal Environment

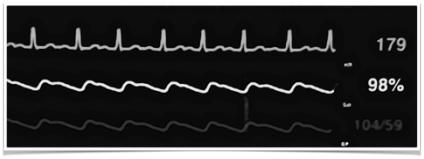




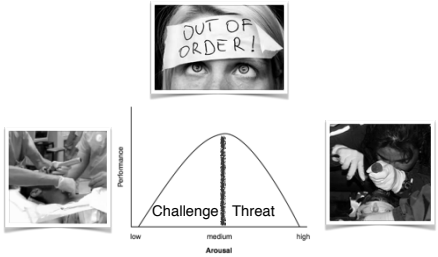
The Amygdala Hijack

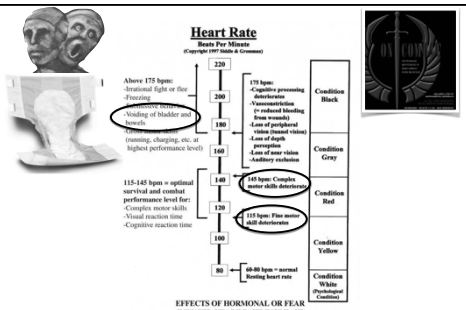


These are your vitals

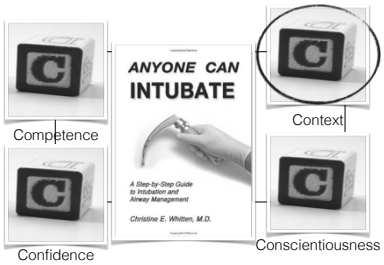


Times of stress



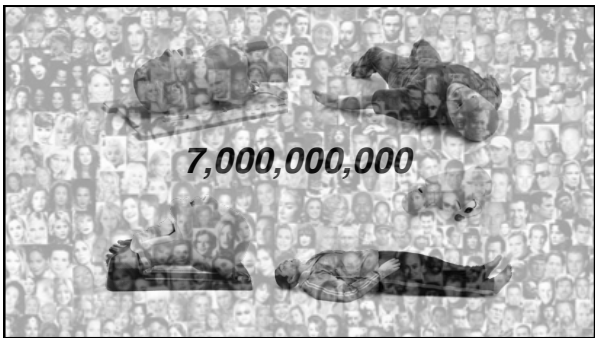


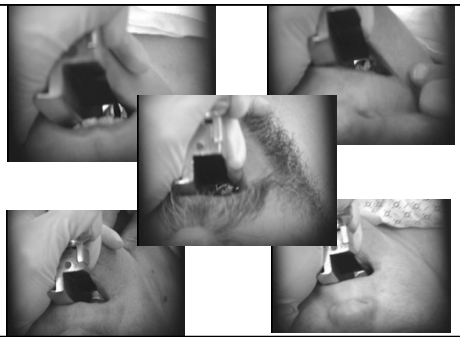
Context: Learning Environment



Context: (3) Classroom bias

"Plastics makes perfect"

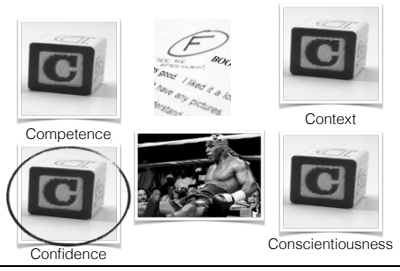




No manikin that reinforces:

- Jaw thrust x
- Effective BVM with chest rise x
- ELM x
- Bimanual DL/ Bougie use x
- Accommodate various SGA's x
- & Surgical airway x

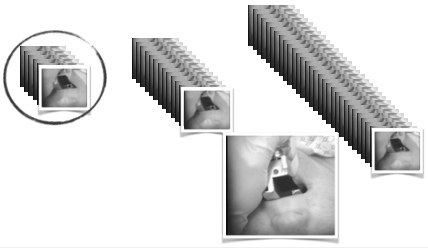
Confidence



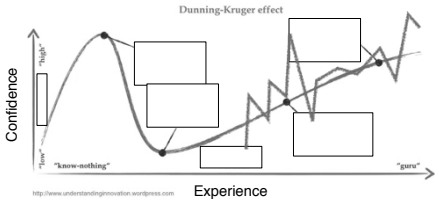
(4) Overconfidence bias

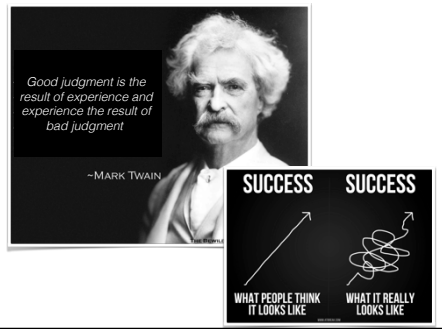
"we all got plans, til you get punched in the mouth"

Number Needed to be… Confident



Confidence





Conscientiousness

Confidence

Context

Competence

Conscientiousness … work ethically

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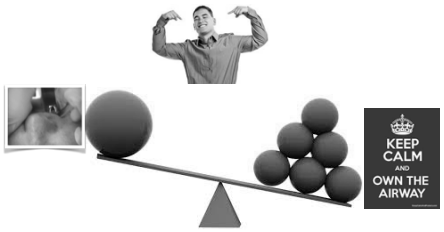
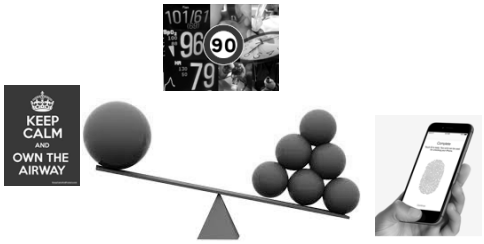
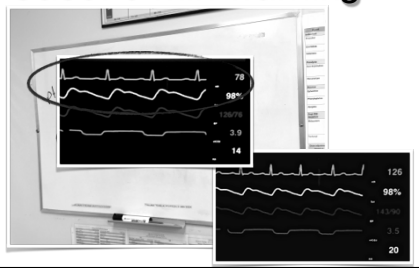
It's not about you



It's about the patient

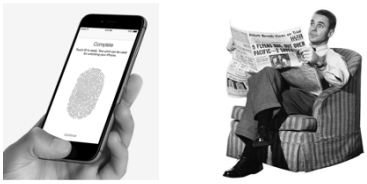


Case: 5 min warning



(5) Conflict Avoidance

GSW to face in 10 min

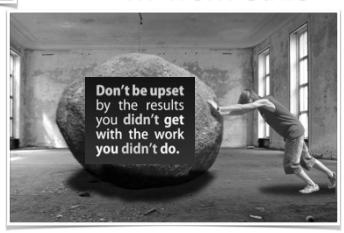


"call me when the patient gets there"

How to ask for help!

Have a script, Be specific!

Conscientiousness … work ethic



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High Acuity Low Opportunity Challenge

Petrosoniak & Hicks. Current opinion in Anaesthesiology. 2013

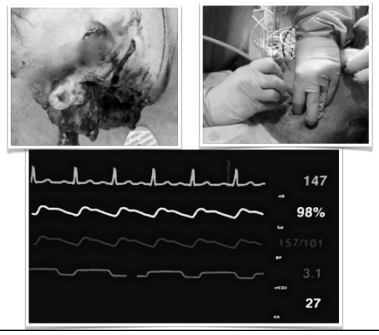
High Acuity Low Opportunity Decisions/Actions

System 1
- Rapid
- Pattern recognition
- Overlearning
- Psychomotor heuristics
- Algorithms

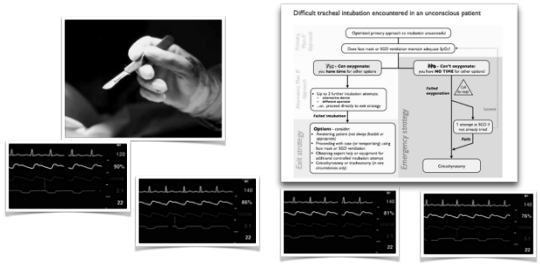
System 2
- Slower
- Methodical
- Hypothesis
- Failed system 1
- Checklists

Antifragile Simulation: Things that gain from disorder

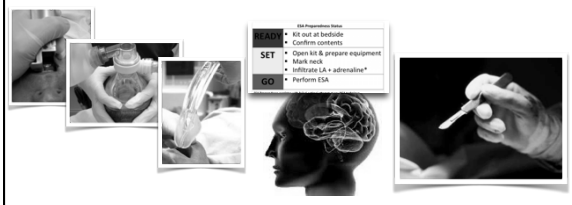
Stress Inoculation



System 1 Training: Cued Response



System 1 training: Cued Response

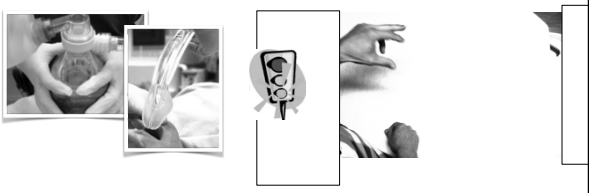


System 1 training
Learn as Many/Execute as 1
Psychomotor heuristics

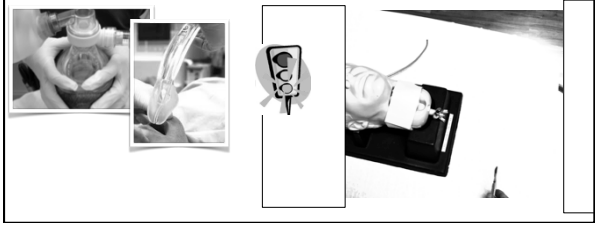
Step by step:

1. Position yourself to be on the same side of the patient as your dominant hand. (right handed, right side of patient).
2. With left hand stabilize larynx between thumb and middle finger and attempt to palpate CTM from sternal notch upwards and from hyoid down.
3. With your dominant hand using a #10 blade make a 2-3 cm vertical midline incision with 1-3 progressive swipes of the blade.
4. Maintain left hand stabilization of the [illegible] probes the incision to identify the CTM.
5. Once the CTM is identified maintain st[illegible] move index finger to the superior margin of the CTM and incise the CTM e[illegible] blade oriented in the horizontal plane.
6. Without removing the blade extend the [illegible]ations.
7. Reorient the blade, still within the CTM [illegible]al plane so that the cutting surface of the blade is down (towards the patients fe[illegible]
8. Sweep the blade within the CTM to th[illegible] and place the bougie alongside the blade.
9. If there is difficulty placing the bougie [illegible]verted just after the blade is removed (cutting surface down/caudad) to serve [illegible]
10. The index finger may be withdrawn to shi[illegible] within the CTM space to allow a bougie to be placed alongside of the finger.
11. A number 5.5-6.0 ETT is placed over the bougie into position and then the bougie rmoved.
Inflate cuff, ETCO2 and usual post intubation care.

Cued Response:
Learn as Many/Execute as 1
Psychomotor rehearsal/heuristics



Cued Response:
Learn as Many/Execute as 1
Psychomotor rehearsal/heuristics



System 1 training to avoid:
(6) Fixation Bias

I can't see %$^&!!!

(7) Nightingale bias

Errors of omission/commission (2:1)

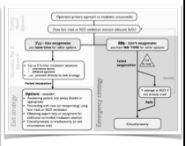
"We're more comfortable doing nothing and failing than having done something that may be perceived as the cause failure"

High Acuity Low Opportunity Decisions/Actions

System 1
- Rapid
- Pattern recognition
- Overlearning
- Heuristics
- **Algorithms**

System 2
- Slower
- Methodical
- Hypothesis
- Failed system 1
- **Checklists**

Checklists/Decision Aids Sharing Mental Models



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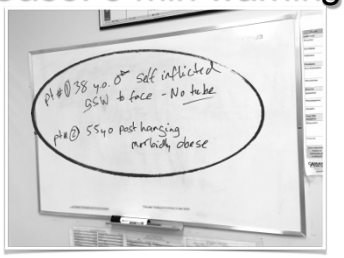


What can we do for High Acuity Low Opportunity Scenarios

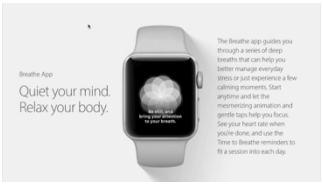
- Be better than good enough
- Practice procedure/antigragile sim
- Be confident but humble
- Psychomotor heuristics
- Define your cues/triggers
- Share mental models
- Understand threatening bias
- *Control your physiology?*

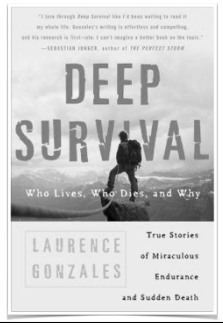
Lessons from Combat & Wonder Woman

- Can we manage our stress physiology to improve performance & patient care?

"I can do this"

Focused Attention





- Fear & Anxiety are Normal
  - *How you deal with it*
- Having a plan is necessary
  - *Survival is about how you adapt when plan fails*
- Environment does not adapt to your skill

Thank you