When Pain is Inevitable.. Do Words Matter?

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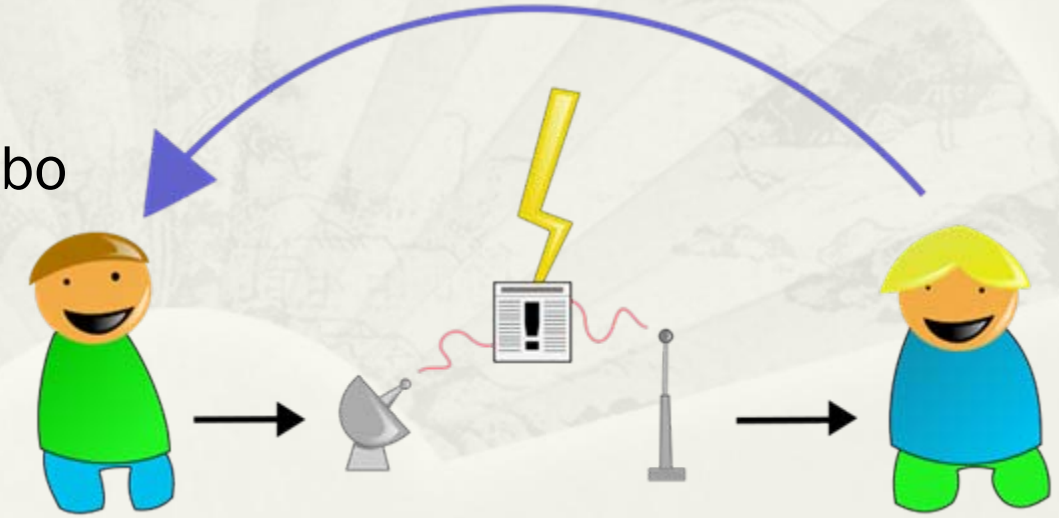
Making Sense of this Communication

- Speaker
- Structure
  - Setting the scene
  - Science:
    - Words
    - Placebo & Nocebo
    - Expectations
    - Clinical studies
  - Summary

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"And this chart shows our rate of growth."

“Sticks and stones may break my bones but words may never hurt me”

- Words can hurt
- Words can alleviate suffering
- Placebo effect


PRIMUM
NON
NOCERE

Can words hurt?

ANESTH ANALG
1983;62:1073–7

Cognitive Reversal of Expected Nitrous Oxide Analgesia for Acute Pain

Samuel F. Dworkin, DDS, PhD, Andrew C. N. Chen, PhD, Linda LeResche, ScD, and Daniel W. Clark, BS

- Electrical tooth pulp stimulation
- Reduced pain threshold and tolerance in the presence of nitrous oxide
- Rationale for supporting enhanced sensitivity

"ONE OF US IS A PLACEBO, MR JONES..."

Placebo

"I will please"

Expectation of improvement

Improvement

Nocebo

"I will harm"

Expectation of worsening

Worsening

Expectations and brain activity

- Negative expectations may result in amplification of pain

  (Dannecker et al 2003)

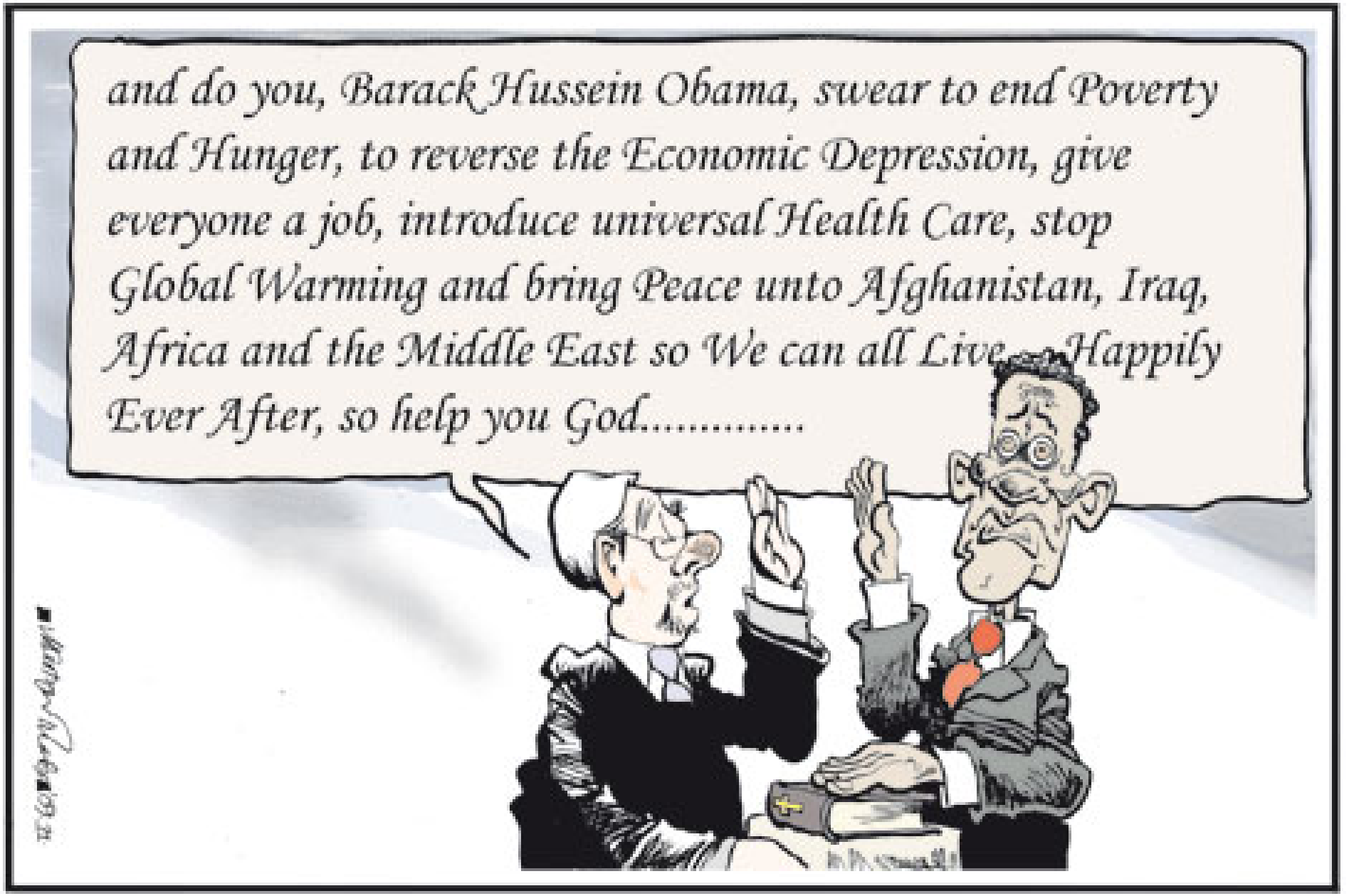
- Anterior cingulate cortex , prefrontal cortex & insula activated during anticipation of pain

  (Chua et al 1999, Hsieh st al, 1999, Ploghaus et al 1999, Porro et al 2002, 2003, Koyama et al 2005, Lorenz et al 2005, Keltner et al 2006

Positive vs Negative expectations

- Magnitude of expected pain increased, activation increased in
  - Thalamus
  - Insula
  - Prefrontal cortex
  - Anterior cingulate gyrus
- Expectations of decreased pain, reduced activation in
  - Primary somatosensory cortex
  - Insular cortex
  - Anterior cingulate gyrus

Koyama et al 2005


and do you, Barack Hussein Obama, swear to end Poverty and Hunger, to reverse the Economic Depression, give everyone a job, introduce universal Health Care, stop Global Warming and bring Peace unto Afghanistan, Iraq, Africa and the Middle East so We can all Live Happily Ever After, so help you God.....

How the Doctor's Words Affect the Patient's Brain

Fabrizio Benedetti

Eval Health Prof 2002; 25; 369
DOI: 10.1177/0163278702238051

- Doctor-initiated versus machine initiated therapy
- "It may work" versus "It does work"
- Appropriate words activate endogenous opioid systems placebo effect
- Appropriate words yield a nocebo effect

Doctor-initiated versus machine initiated therapy

- Open injection of saline = hidden injection of 6 to 8 mg morphine (12mg > saline!)

  Levine 1981

- Analgesic dose much higher for hidden infusions
  - Buprenorphine, tramadol, ketorolac & metamizol
  - Naloxone reduces analgesia from ketorolac to that of an hidden injection (ie eliminating the expectation component pharmacologically

  Amanzio 2001

“It may work” versus “It does work”

- Post thoracotomy patients, buprenorphine PRN & infusion of saline
  - Group 1: told nothing re infusion (natural history)
  - Group 2: potent analgesic or placebo (double blinded)
  - Group 3: potent analgesic (deceptive regime)
- Time course of pain similar but
  - Group 2; 28% less request for analgesia
  - Group 3: 33.8% !!!

Pollo et al., 2001

Appropriate words activate endogenous opioid systems placebo effect

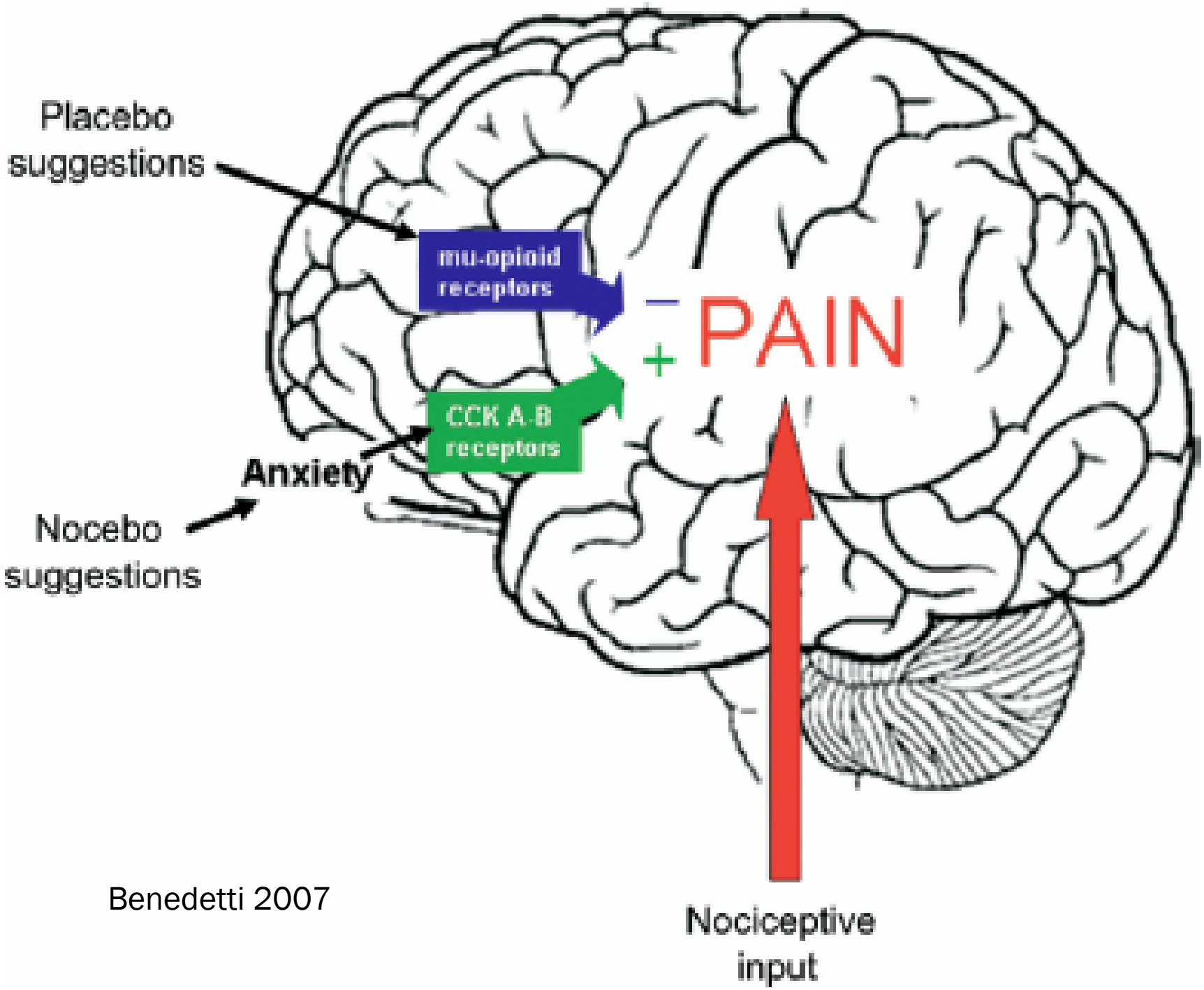
- Ischaemic arm pain model
- Non opioid analgesic
- Expectation cues for analgesic placebo
  - Partially blocked by naloxone
- Expectation of analgesic eliminated
  - Naloxone did not block placebo analgesia

Amanzio & Benedetti, 1999

Appropriate words yield a nocebo effect

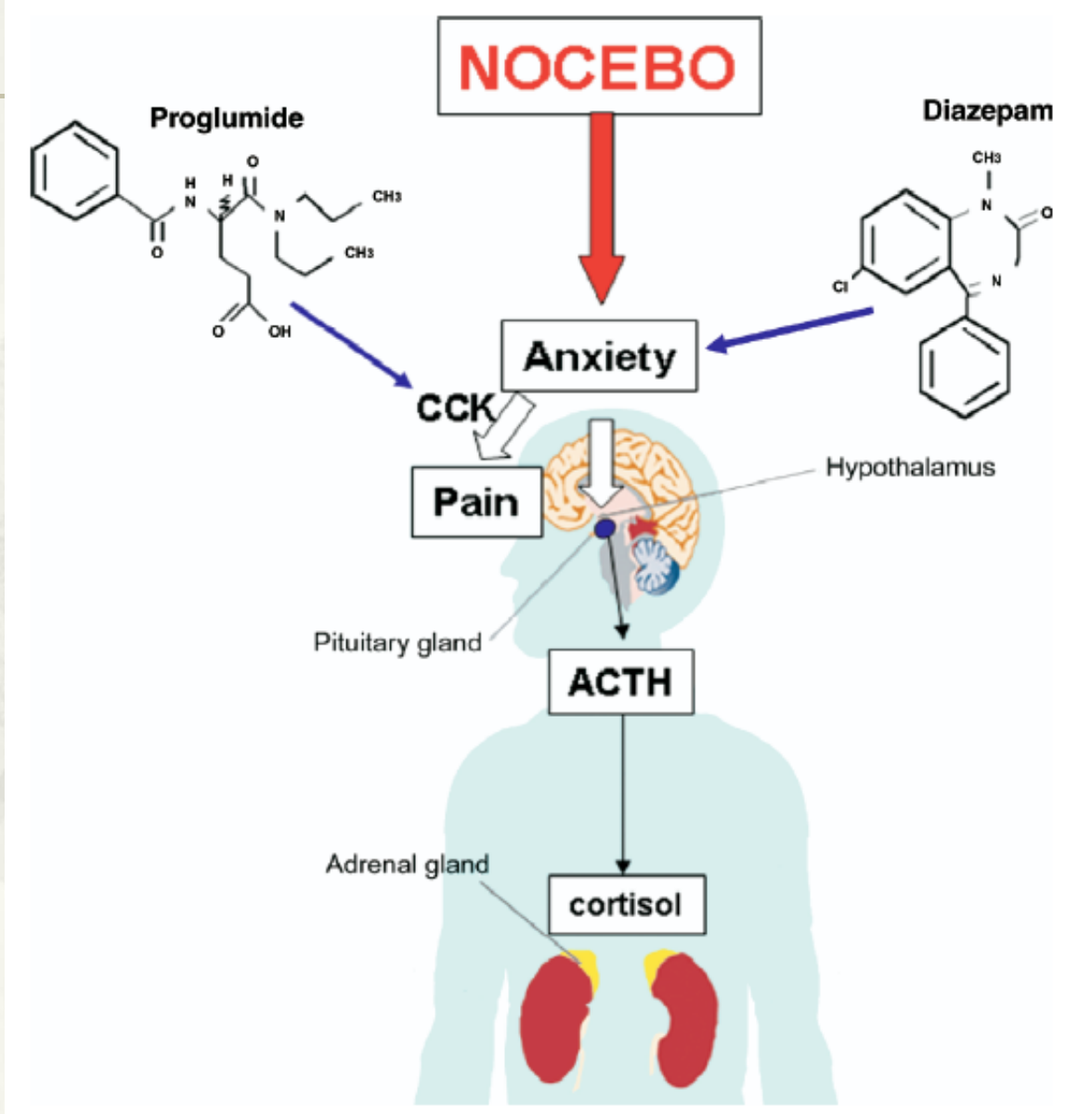
- Post operative patients with mild pain
  - Saline solution injection
  - Informed patients that pain will increase
  - Nocebo effect induced
  - Nocebo effect modified by CCK antagonist proglumide

Benedetti, Amanzio, Casadio, Oliaro, & Maggi, 1997



Benedetti 2007

Anatomy of nocebo



Benedetti 2007

Pain 136 (2008) 211–218

PAIN

www.elsevier.com/locate/pain

The role of learning in nocebo and placebo effects

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- Placebo analgesia
  - Conditioning (learning): ++
  - Verbal: less important
- Nocebo hyperalgesia
  - Conditioning: less important
  - Verbal: most contribution

"Correct. And in the case of a cardiac arrest, every second counts. Who can tell me why? Anyone? Clock's ticking."

PAIN

Pain 114 (2005) 303–309

www.elsevier.com/locate/pain

Clinical note

Can words hurt? Patient–provider interactions during invasive procedures

Elvira V. Lang*, Olga Hatsiopoulou, Timo Koch, Kevin Berbaum, Susan Lutgendorf, Eva Kettenmann, Henrietta Logan, Ted J. Kaptchuk

- Retrospective video analysis of 2 controlled arm of 3 arm trial
- Warning patients in terms of pain or undesirable experiences resulted in greater pain and anxiety
- Sympathizing with the patient after the event resulted in greater anxiety

British Journal of Anaesthesia **99 (6):** 871–5 (2007)
doi:10.1093/bja/aem308 Advance Access publication October 30, 2007

BJA

PAIN

Effect of communication on pain during intravenous cannulation: a randomized controlled trial

J. Dutt-Gupta[1], T. Bown[1] and A. M. Cyna[1 2*]

- Group S " I am going to apply the tourniquet and insert the needle in a few moments. It's a sharp scratch and it may sting a little
- Group NS "I am going to apply the tourniquet on the arm becomes heavy, numb and tingly. This allows the drip to be placed more comfortably

Summary Slide

- Words are powerful
- Expectations
  - Relates to perceived pain intensity
  - Activates different brain regions
  - Alter the efficacy of pharmacotherapy
- Placebo and nocebo are pharmacologically and behaviourally different
- Warning patient of impending pain may not be unhelpful

Pain and the Patient

- No pain now, pain inevitable, no previous experience
  - Rationalise
  - Catastrophize
- No pain, pain inevitable but previous experience
  - Conditioned response
- Already in pain seeking relief
  - Chronic pain

My general approach

- Assessment of pain expectation
- First do no harm
  - Anxiolysis
  - Avoid nocebo (avoid being dismissive)
- Exploit the placebo
  - Be positive but not arrogant
- Not advocating deception!

When Pain is inevitable.. Do Words Matter?

Yes, I think so

So be careful of what you say!

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