

# RECENT ADVANCES IN NEUROENDOCRINE RESPONSE TO STRESS

PRESENTED BY  
DR.PRANAY GAUTAM PYDA

# Contents of the Seminar

- Disturbance caused by STRESS RESPONSE to Homeostasis
- Recent Advances in Neuroendocrine Response to Stress
- Reduction of Stress response to Surgery (Use of ERAS Protocol)

# **DISTURBANCE OF HOMEOSTASIS OWING TO STRESS RESPONSE**

**STRESS  
RESPONSE**

```
graph TD; A[STRESS RESPONSE] --- B[NEURO-ENDOCRINE RESPONSE]; A --- C[HAEMOSTATIC RESPONSE]; A --- D[INFLAMMATORY RESPONSE]; A --- E[ACID BASE IMBALANCE]; A --- F[INSULIN RESISTANCE];
```

**NEURO-  
ENDOCRINE  
RESPONSE**

**HAEMOSTATIC  
RESPONSE**

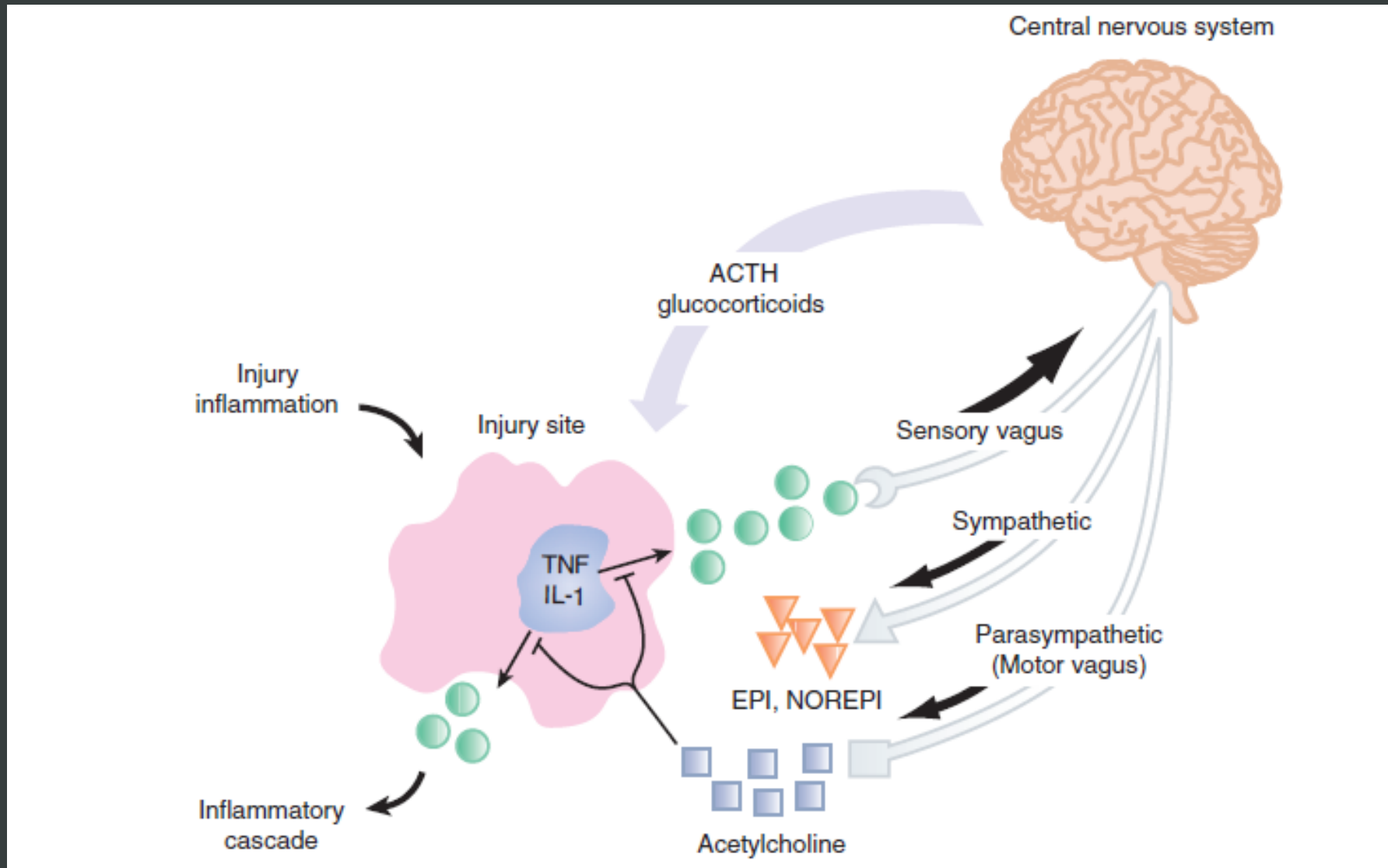
**INFLAMMATORY  
RESPONSE**

**ACID BASE  
IMBALANCE**

**INSULIN  
RESISTANCE**

# NEUROENDOCRINE RESPONSE

# Role of Central Nervous System



# Neuroendocrine Response to Stress

- HPA Axis
- Catecholamines
- Growth Hormone, IGF
- Ghrelin
- Macrophage Inhibitory Factor (MIF)
- Aldosterone
- Insulin

# HPA Axis

Hypothalamus

- CRH
- GHRH

Pituitary

- ACTH
- GH

Adrenal  
Cortex

- Cortisol
- Aldosterone



# CORTISOL

HORMONAL STRESS COMBATANT

# MACROPHAGE INHIBITORY FACTOR

CORTISOL ANTAGONIST

# GROWTH HORMONE

ALONG WITH IGF

# Ghrelin

APPETISER AND GROWTH HORMONE  
SECRETAGOGUE

# ALDOSTERONE

INSULIN RESISTOR

INSULIN

**E**nhanced

**R**ecovery

**PROTOCOL**

**A**fter

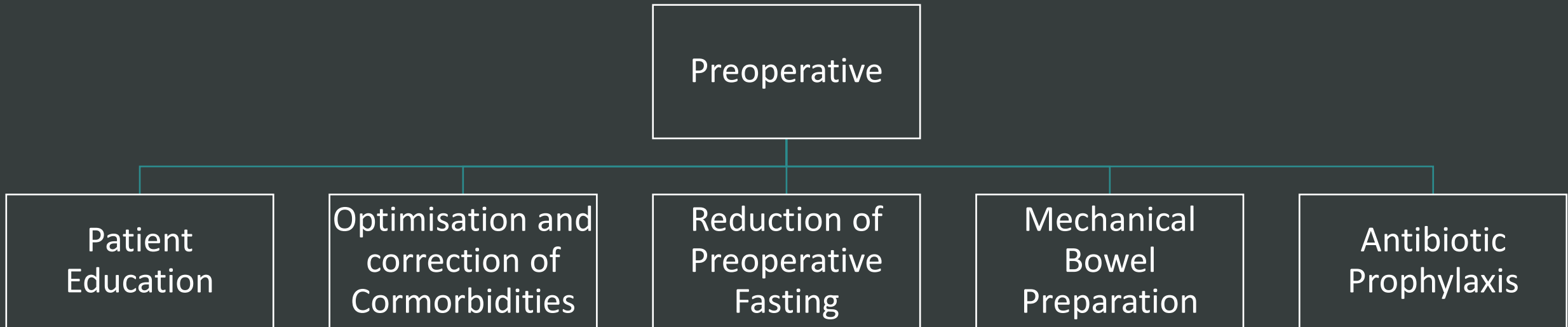
**S**urgery

# AIMS of ERAS Protocol

- Optimising and Standardising Perioperative care
- Attenuation of Metabolic, Inflammatory and Endocrine stress response to Surgical trauma
- Reducing Length of hospitalisation and facilitating early recovery



# Components of ERAS



Intraoperative

```
graph TD; A[Intraoperative] --- B[Optimising Anaesthetic techniques]; A --- C[Maintenance of Normothermia]; A --- D[Use of Minimally Invasive Techniques]; A --- E[Goal Directed Fluid Therapy];
```

Optimising  
Anaesthetic  
techniques

Maintenance of  
Normothermia

Use of Minimally  
Invasive Techniques

Goal Directed Fluid  
Therapy

# Post Operative Components

- Post Op Analgesia
- Post op Nausea and Vomiting Prophylaxis (PONV)
- Restrict use of NGT
- Restrict Use of Drains
- Early Nutrition and Mobilisation
- Audit

THANK YOU